ARCHIVES OF OPHTHALMOLOGY.

THE KNIFE-NEEDLE OPERATION FOR SECONDARY CAPSULAR CATARACT.*

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(*With three text-figures.*)

IN most of our text-books on diseases of the eye, the short paragraph devoted to the needle operation for secondary cataract contrasts sharply with the pages given to the description of cataract extraction. Yet it is safe to say that in practice there are ten failures of the needle operation to one failure in extraction. These failures are well illustrated by the following case seen recently.

Mrs. H., aged seventy-four, came with a history of cataract extraction from the left eye one year before, by an ophthalmic surgeon of ability and considerable operative experience. Six months after, the eye was needled, and the needling operation repeated three months later. Immediately after the needling, vision was improved, but in a few days was as bad as ever. Vision with lenses was $\frac{4}{15}$ partly. But the patient had not enough confidence in her vision to go about alone, regarded the operation on her left eye as a failure, and came for an operation on her right eye. The eye showed the results of extraction with an iridectomy, the pupil being occupied by wrinkled capsule, some portions of it moderately thickened. The pupillary membrane had been punctured and partly loosened at its nasal margin, but no clear pupil had been secured.

An operation with a knife-needle, which was not difficult although slightly complicated by the loosening of the membrane from its attachments at the nasal side, gave a clear

* Read before the Colorado Ophthalmological Society, Dec., 1905.

pupil and vision of $\frac{1}{3}$, which remains unchanged at the end of six months.

Cases in which success is not attained, or is only attained after repeated needle operations, are quite common. E. J. Loring,[1] in proposing a new procedure, said: "It is to avoid these numerous and, as a usual thing, inefficient operations." F. Buller,[2] in suggesting another method, remarked: "Discission of the capsule for the betterment of vision, after otherwise successful cataract operations, presents so many difficulties and dangers that any genuine improvement in the technique of removing or displacing an obstructing capsule cannot fail to be appreciated."

I was once taken to task by Dr. H. Knapp for the statement[3] with regard to operations for secondary cataract: "They are not without danger. They may cause infection of the eye and general inflammation of the uveal tract." This was contrary to his experience, and I had to admit that it was not supported by my own. But a text-book should rather reflect the general experience of the profession. I have repeatedly seen eyes lost after needling in the practice of others, and there is abundant literature to justify the above statement.

Dr. J. E. Weeks,[4] in a paper advocating a special form of knife-needle operation, said: "The reluctance of many operators to perform discission is undoubtedly due to some bad results that have followed." And in discussion of Dr. Weeks's paper, Dr. Cheatham narrated an experience which, he said, "makes me dread the operation, and I never do it if I can avoid." Dr. H. D. Noyes found that "in the simple operation, where the pupil has not been interfered with, to deal with the membrane is not a simple thing." Elsewhere[5] Dr. Noyes said: "Under all precautions, both operative and antiseptic, I have seen disastrous accidents follow a faultless discission."

In the Royal London Ophthalmic Hospital Reports,[6] C. D. Marshall reports the results of 1509 cataract extractions. Suppuration occurred in 1.72 % of the cases. Five hundred and twelve had secondary operations, and after having escaped suppuration in the primary operation 1.02 % were lost

by suppuration in the secondary operation, while 5.58% underwent slow inflammatory changes, which ultimately diminished or permanently destroyed the sight. In the same reports two years later, Fischer and Marshall[1] report that, among one hundred and twenty-three eyes subjected to simple needlings for lamellar cataract, eight were lost by suppuration, and five of these were enucleated.

However, I fully believe with Dr. Knapp[2] that with proper precautions such unfavorable results may almost always be prevented, and that the needle operation for secondary cataract may be made as safe and reliable as any operation in surgery. For its proper performance the following points must be carefully attended to:

(1) *To see the operation, there must be a strong oblique illumination of the eye, and the surgeon must possess powerful accommodation, or use spectacles with strong convex lenses, or the binocular magnifier.* The reflex from the cornea when the eye is exposed to a general illumination will effectually baffle any effort of the surgeon to see what he is doing to the pupillary membrane. Even though, to start with, the eye be placed so that the reflex does not prevent seeing the membrane, a slight movement of the eye, or the distortion of the cornea caused by the needle passing through it, may bring the reflex in the way, so that it hides the whole field of operation. The only light that can be fully depended upon is that of focal illumination in the dark room.

The thickened bands of capsule and synechiæ that are to be considered in doing such an operation, and the exact placing of the point of the knife for the incision, are matters of too minute distances to be readily seen from a working distance of twelve or fourteen inches. From this distance, too, it may be quite impossible to judge whether or not one has accomplished what he desires. The operation becomes far simpler and more certain, when the eye is viewed under the amplification obtained at a distance of three or four inches. This may be secured by the exertion of exceptionally powerful accommodation, and the wearing of the necessary convex lenses, but only by bringing the surgeon's face inconveniently near the patient's eye. It is much more convenient

to work with the binocular magnifier, planned to give a working distance of six inches, while the eye is seen through three-inch lenses, in full binocular vision.

(2) *The knife-needle must be perfectly sharp, and its shank must exactly fill the external opening to prevent escape of aqueous.* There are very few membranes so tough that they cannot be cut by the gentle sawing movement of a sharp knife-edge, without dangerous traction on their attachments. In the old needle operation for secondary cataract, no attempt was made to cut the membrane. It was simply torn. Mackenzie[9] says: "We often find that the shreds into which we tear the obstructing membrane retreat behind the iris." It is probable that this tearing of the membrane, and consequent dragging upon its attachments, was responsible for a large proportion of the bad results obtained by old needle operations. Bowman's double-needle operation was superior to its predecessors, because while it tore the membrane it did so without dragging on its attachments. Buller's double needle to fix the membrane,[10] Agnew's and Noyes's plans to operate so as to drag on its centre rather than upon its attachments, were all improvements, in that they diminished the risks of this dragging. But Hays's use of a knife-needle was a greater advance. Even the employment of a Graefe knife, or a smaller knife of similar pattern, as by Loring and Berry,[11] were improvements over the tearing operation. Only a cutting, not a tearing, operation should now be considered. Knapp[12] has insisted on this, and probably to his practice in this respect is largely due the absence of bad results from the needle operations in his very extended experience. But traditions and descriptions of the old tearing operation still influence the profession, so that we are not so careful as we might be about the sharpness of the cutting edge of the needle, and to see that the force is exerted exactly in the direction of the cutting edge. If the cutting edge be not turned exactly in the direction in which the force is applied, one tears with a sharp needle as well as with a blunt one. The escape of aqueous from the corneal wound alongside of the needle always adds to the difficulty and uncertainty of the operation. This is a matter of

such common observation that it need not be dwelt on here.

(3) *The knife-needle must be entered through the vascular tissue of the corneal limbus, and not through the clear cornea.* This is the essential and especial point that I wish to emphasize. It is surprising that it has so long escaped special attention. It was emphasized in a paper read before the Section on Ophthalmology of the Philadelphia College of Physicians more than eight years ago.[13] A few writers have spoken of making the puncture "near the corneal margin."[14] But the majority only describe something like the operation given by Fuchs,[15] who says: "The puncture is made in the centre of the outer and lower quadrant of the cornea, as in the discission of soft cataracts." For special reasons it may be allowable to make the puncture at this point, in the first discission of a soft cataract. In my judgment, it is wrong ever to enter the needle through the clear cornea in operating for secondary capsular cataract. I believe that in time it will clearly be ranked as malpractice to do so.

The entrance through the limbus gives two immense advantages: practical immunity from infection by going through a vascular tissue, and a longer leverage. The point of entrance through the sclero-corneal coat becomes the fulcrum about which all subsequent movements of the knife-needle take place. If this be well in the vascular limbus it will, on the average, be twice as far from the point at which the membrane is being divided by the knife-edge, as would a puncture in the cornea as advised by Fuchs. This means that the same length of sweep of the knife-edge will be obtained with one-half of the twisting of the shank in the puncture—less than one-half of damage to adjoining tissues.

In the vascular limbus the wound is instantly closed with fresh blood, the best antiseptic we have at our command in ophthalmic operations; and healing by primary union is certain. I have never seen the slightest evidence of infection of such a wound, and it is hard to conceive how such infection could occur in a carefully performed operation. In the practice of a colleague I have seen infection appear in a corneal wound, at the end of a week of apparently perfectly

favorable progress, and go on to rapid disorganization of the eyeball. In the case of corneal puncture the greater bruising due to a short leverage falls on a non-vascular tissue, exposed in the conjunctival sac, which can never be rendered sterile. Such an operation needlessly and recklessly violates important surgical principles.

The corneal puncture also entails a very strong probability that the operation will prove ineffective. It has been mentioned that to puncture the limbus doubles the length of leverage and the sweep of the knife-edge. But it far more than doubles the length of the incision that may be obtained by a sweep of the needle. The pupillary membranes operated on are all of them elastic. Mackenzie, speaking of the opaque and thickened capsule, says: "In this state it is so tough and elastic that we cannot divide it. We may carry it on the point of the needle almost to the bottom of the vitreous humor, whence it instantly springs up again to its former situation."

Even with a perfectly sharp knife the membrane always stretches and gives somewhat, before the knife-edge begins to cut. Suppose in a given case one can obtain with a peripheral puncture a sweep of 8*mm*, while with the corneal puncture he can get only a sweep of 4*mm*. If now the membrane pulls 3*mm* before the edge of the knife, as it will in the majority of cases, before the knife begins to cut, the opening obtained with the corneal puncture will be but 1*mm*, while that secured by entering through the limbus will be five times as long. But the difference between the two plans of entrance is even greater than this would seem to indicate. In the ideal operation, no aqueous escapes until the operation is completed But even with a well-proportioned knife-needle, under the pressure to which the eye is necessarily subjected and the twisting movements, especially in the rigid tissue of the cornea, some aqueous is very frequently lost. When such a loss occurs, if the needle enters through the cornea approximately perpendicular to the pupillary membrane, it is very easy for this membrane to be pushed up the needle until it is almost in contact with the cornea, and no amount of sweeping or twisting will cut the

membrane at all. This is the common cause for failure of the second incision that we attempt to make in the capsule. When, however, the needle is entered through the limbus, its position is so oblique to the plane of the membrane that it is impossible for the puncture in the membrane to be pushed up to the puncture in the limbus so as to prevent an effective incision.

This superiority in efficiency makes it easy to attain success with the limbus puncture in cases in which it would be quite useless to attempt a simple needling by the ordinary method. Not all cases of capsular cataract can be relieved by such needle operations. But in more than ten years I have encountered no such case that I could not relieve by a single needle operation through the limbus. And in that time I have relieved several that in earlier years I would have subjected to some more formidable operation, such as excision of the membrane with the de Wecker scissors, or iridectomy. A case in point is the following, in which the only criticism that could be offered upon the result was that the opening obtained by the single needle operation was larger than necessary.

Mrs. B., aged seventy-one, after extraction without iridectomy suffered prolonged irido-cyclitis. At the end of ten weeks the eye was quiet, tension normal, light perception good, but the pupil was reduced to a line and filled with thick exudate. With the large Knapp knife-needle entered through the lower-outer part of the limbus, a cut was made in the direction of the pupil, and a second incision, at right angles thereto, across the iris sphincter.

FIG. 1.—Pupil closed by prolonged plastic uveitis.

FIG. 2.—Pupil obtained by a single needle operation.

This operation was followed by a moderate recurrence of the uveitis, but there was no tendency to reclosure of the pupil, and with correcting lenses vision of $\frac{4}{5}$ was subsequently secured. The appearances of the iris and pupil before and after the needle operation are shown in the accompanying figures.

The objections which might be, or have been urged to entering the eye through the limbus are: nearness of the puncture to the ciliary body, greater difficulty in cutting a membrane obliquely, and greater difficulty in exactly placing the point of puncture.

The fear of approaching the ciliary body is based on failure to appreciate the distance of the limbus in front of the dangerous zone. It is only needful that the superficial tissue at the point of entrance shall be vascular, and the needle can be entered through the vascular tissue so as to pass 2 or 3*mm* distant from the nearest point of the ciliary body. In passing through the limbus, the danger of involvement of the ciliary region is not materially greater than for any puncture placed in the clear cornea.

The supposed greater difficulty of cutting the membrane because of the obliquity of the knife to it, does not exist. Nothing of the kind has been felt in practice; and as a matter of fact the membrane pushed before the point or edge of the knife in a measure folds over it, so that the cut is made about perpendicular to the membrane. The difficulty of exactly placing the point of puncture with the needle oblique to the membrane is real, but it is comparatively slight and of no practical importance. The securing of a sufficient opening in the membrane is much more important than the exact placing of it. But with the binocular magnifier there is little difficulty in placing the puncture and cut where they are wanted.

(4) *Placing of the Incisions in the Membrane.*—A single straight incision is never reliable. However it may gap at the time of operation, it tends subsequently to close. A second incision, meeting the first at an angle, will prevent this. A crucial incision would often be good; but it is equally effective and decidedly easier to make T-shaped or V-shaped incisions. Such incisions are illustrated in the figure on page 135, which shows by the solid line the first incision just being completed, and by the broken line the place for the second incision. The incision which is nearer to the point of entrance through the limbus should be made first, because it is the more difficult. Great care must be taken

to see that the second incision passes fairly into the first, and does not leave a bridge of membrane between them.

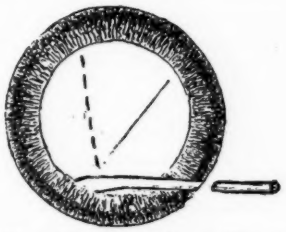

FIG. 3.—Position of incisions in the pupillary membrane.

The specific gravity of the membrane is so nearly that of the aqueous humor that the fragments of membrane float up or down equally well. It is therefore of little importance whether the junction of the two incisions is upward or downward, or to one side. In planning them it is wise to make the first incision pass through or near the firmest adhesions of the capsule to the iris. Sometimes the second incision can be better made by withdrawing the knife-needle and entering it through some other part of the limbus. Knapp[13] speaks of having made such repeated punctures without any ill effect. With the entrance through the limbus made obliquely with a Knapp knife-needle, I have found no difficulty from leaking through the first puncture, while the second incision was being made. Eyes subjected to two punctures through the limbus certainly heal more smoothly and promptly than they do after a single puncture through the cornea, subjected to the necessary greater twisting.

Summary.—The most important points here urged are: The knife-needle should always be entered through the vascular tissue of the limbus. It should be absolutely sharp, and used so as to cut, not tear. The operation should be done under strong illumination. Two incisions must be made, completely joining each other at a sufficient angle. Attention to these points will render the operation with the single knife-needle efficient for almost all cases of secondary capsular cataract, and make it one of the safest operations of surgery.

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THE TREATMENT OF AFTER-CATARACT.

By Major HENRY SMITH, I. M. S.,

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THIS is one of the evergreens of ophthalmic surgery, Every one admits that, however successfully a cataract may be extracted by the orthodox method by which the capsule is left behind, there is an after-cataract—an opaque capsule varying only in degree of density—and that if the patient is to have vision for fine work an after-cataract operation is invariably necessary.

It is a fact, I think, which most men of experience will admit, that the treatment of an after-cataract by needling is more difficult to the operator and more dangerous to the eye than an ordinary cataract extraction. In my observation, an eye containing an after-cataract, whether it be dense or a mere capsule, is always a source of danger to its possessor. An after-cataract or capsule has no function in nature to perform and nature resents its presence. It is, in a manner, a foreign body and nature behaves to it as she behaves to such foreign bodies.

Ask any patient who has an after-cataract if he feels that he has got an eye, and, I think, he will almost invariably tell you that he does. He will tell you that if exposed to cold wind—if he coughs or sneezes or strains at stool—he feels that eye tender. My observation is, that if he gets a mild ophthalmia in it or the slightest injury he is very likely to have serious intraocular inflammation of almost any variety. These conditions are not invariable but are exceedingly common.

It is interesting to look over the discussion on the treat-

ment of after-cataract at the meeting of the British Medical Association at Cheltenham in 1901, when it was laid down and tacitly admitted that "the ideal extraction of a cataract is that of the whole lenticular body in its capsule, but that this is only safe under exceptional circumstances." Then to observe the reception I got at the British Medical Association meeting at Swansea in 1903 when I appeared to demonstrate that it was not only ideal in theory but ideal in practice and that the exceptions to this were few. The President of the Section called for criticisms and opinions by saying that he "felt that there was a deep-rooted opposition to this procedure in the meeting." And when done not a word of complaint from the President of the Section. Matters in this respect might have been different if I had been Herr von Teufel from the Vaterland instead of being an executive officer of the Indian Medical Service. Similar was the reception Keegan and Freyer got when they first brought litholapaxy prominently before the profession. Then to note in connection with the above mentioned admission at Cheltenham in 1901, the fact that extraction in the capsule had been prominently brought forward at Swansea in 1903, and the fact that at the recent British Medical Association meeting and at the recent meeting of the American Medical Association not a single reference was made to extraction in the capsule though, at both those meetings, the subject was discussed at length of what is, practically speaking, *the best way of preventing after-cataract complications.* Why do ophthalmologists thus stand off extraction of cataract in the capsule as unmentionable—as a "leper"? I can only say that, in my opinion, the day is not far distant when they will have to get into closer quarters with it. The attitude of ophthalmologists towards extraction of cataract in the capsule is, I think, correctly represented on page 1419 of the *British Medical Journal* of November 25, 1905.

We now come to the orthodox operation of needling after-cataract. Will those who are afraid of injuring the vitreous by extracting cataract in the capsule attempt to persuade us that they can needle an after-cataract without tearing up the vitreous with their needles? Needling is a

haphazard operation largely in the dark as no man can see how far his needles enter the vitreous. If needling is to be done efficiently, the operator must make sure that his needles are well through the after-cataract. If not well through it, he will fail to needle efficiently and will be obliged to make one or more successful attempts with several days intervening. Needling after-cataract is a survival of the practices of the days before antiseptic surgery. It is closely allied, in its whole rationale, to the immemorial operation of couching the lens. The lens-coucher attempts to couch the whole lens. The modern procedure is to extract the contents of the capsule or as much of the contents as the operator can, and, later on, to couch the capsule or tear it up with what may remain of its contents without making more than needle punctures into the anterior chamber.

We have only to look over the discussion at the British Medical Association meeting of 1901 to see that the multiplicity of procedures for what seems a simple operation brought forward by the leading men, each so satisfactory to its author, is in itself evidence that none of them is satisfactory.

With after-cataract the procedure which I adopt and of which I am a firmly convinced advocate is: dilate the pupil with atropine, cocainize the eye, make an iridectomy-sized wound at the sclero-corneal junction above, do an iridectomy if it has not already been done; reach in an ordinary iris forceps, a little stouter than usual, somewhat beyond the centre of the pupil, and allow the blades to open wide, and drive the point, through the after-cataract wide apart, close the forceps tight, and fetch out the offending body. Thus treated the capsule generally comes out in its entirety, and if not in its entirety it comes out with more efficiency than is to be had by any needling. There may be an escape of a bead of vitreous which is of no importance. Escape of vitreous should not occur if an assistant keeps the upper lid lifted well forward with a blunt hook and keeps the lower lid well drawn down by placing his thumb on the face below it. In this procedure the object of removing the offending body is generally accomplished, and every step of the

operation can be properly seen by the operator, and he knows exactly what he is doing. The results are eminently satisfactory.

ON THE ETIOLOGY OF LAMELLAR CATARACT.[1]

By H. KNAPP.

IN the third decade of the 19th century William Mackenzie, of Glasgow, described a peculiar kind of cataract, which he mostly found in young people, and from its aspect called zonular. He thought that a plate-like stratum was the periphery of the cataractous lens, the latter being shrunken so that a transparent band encircled the cataract and enabled the patient to see through it. After the invention of the eye mirror and the examination by oblique light were introduced, Edward Jäger, of Vienna, discovered that the shrinkage of the lens of Mackenzie was only an opaque layer between the transparent centre and the likewise transparent peripheric layer. He gave it the proper name, fascicular cataract (Schichtstaar), also lamellar or perinuclear cataract. The anatomy of this singular gray sheet was soon understood, but its origin is still to-day an object of research. Soon it was noticed that it was a disease of childhood, and that the children so affected suffered from rickets and convulsions. These two symptoms were the basis in the search of the etiology. Is it the convulsions or a disturbance of nutrition that produces this particular layer between the nucleus and the mantle of the growing lens?

Lamellar cataracts are rarely congenital; the greater number is seen in early childhood.

We can confidently assert that lamellar cataract is an ocular manifestation of rachitis, like the degeneration of the teeth. The latter consists in a porosity or defective

[1] Read before the Section of Ophthalmology of the New York Medica Academy, December 18, 1905.

development of the enamel (erosion). The cause of these changes is a lack of lime to build up the enamel, and the result is a defective product of amorphous masses. The large misshapen skull of these children, with their periodic exacerbations of serous meningitis, causes convulsions, in ninety per cent. of lamellar cataract. Now, what is the cause of the lamellar cataract?

Peters, the former assistant of Saemisch, thinks that the convulsions included also the inner muscles of the eye, chiefly the ciliary muscle, which by its spasmodic contraction interfered with the lens.

Peters, *Zirm*, and others call it tetany, and lay the greatest stress on this symptom.

Horner affirms that the convulsions were a consequence of the craniotabes of the rachitic children, and that the craniotabes extends its influence not only on the bones but also the epithelial structures; therefore "bone and lens." One of the authors on this subject says: "If a competent ophthalmologist examines these eyes during the period of development of the perinuclear cataract, he may come nearest to the solution of this question." I have, in my long life, seen and treated a fair number of zonular cataracts, but there was only one patient that seemed to possess the most important symptoms for clearing up this question. Permit me to read her history, copied from my (private) record-books.

Charles G. B.'s daughter Rozelia, of Syracuse, New York, two years and two months old, was brought to me December 1, 1896. Hydrocephalic conformation of forehead; occiput large when born. Lens transparent; media ophthalmoscopically appear clearly red. Details of fundus not recognizable; place of optic disks apparently an indistinct, whitish patch; no blood-vessels to be made out.

When she was SEVEN MONTHS old, she had a slight convulsion. Then she "got a cold," and the eye-ball was red, and "running matter." The child follows objects, grasps them correctly; eyes move well. The disease lasted six weeks.

Dr. M. ALLEN STARR, who was consulted, writes "that the child probably has had acute inflammation of the ependyma

of the ventricles, with effusion at the time, but that the process was now arrested, and that there was no indication for treatment."

17/V.'97. Media transparent; disks recognizable, not atrophic; retinal veins small. The child, formerly very excited and restless, now quieter. 18/V., 8/XII., '97. Movement of eyes normal. Optic disks seen somewhat blurred. Vessels visible, but scant and small. 9/III. '98. Optic disks and vessels much clearer, though still veiled and small. Ocular movement and child's behavior much improved. 23/V. '98. General condition better; is now three years and nine months old. 1/VII.'98. Slight acute conjunctivitis. 8/VIII. '98. Saw her at Gallilee, New Jersey. Condition still better. 29/X.'98. General condition improved. Optic disks slightly pale, vessels larger, but not yet of normal calibre. Fundus normal; slightly veiled. 3/XI.'98. Slight vitreous opacities and temporal pallor of the optic disks. 12/V.'99. Better. 3/XI.'99. Background normal, and apparently vision also. 20/XI. 1900. After homatropin: skiascopy, myopia 5 or 6 D. Thin and large zonular cataract in both eyes. Edge defined; only a few short "riders." 14/XI. 1901. Glasses comfortable, 20/100. Skiascopy :$-4^{s}-2^{c}$ h. Optic disks temporal crescents; some temporal pallor. Mental condition much better. 17/IV.1901. No change. 3/I. 1902. Glass: $-2-2.^{c}$ Zonular cataract well defined, though thin; at periphery some denser lines. 29/XI. 1902. R. $\frac{20}{40}$; L. $\frac{20}{70}$. Condition as before. [Last seen by H. K.]

From the symptoms of this case I would think that the zonular cataract was caused by a nutritive disturbance.

The meningitis which Dr. Starr admitted in this child extended into the interior of the eye, causing neuro-retinitis and uveïtis serosa. When I saw her at first, I could see no details of the background, as in serous uveïtis. After the clearing, there was still neuro-retinitis which disappeared, leaving some temporal pallor of the disk. The changes in the periphery of the lenses were in patches and lines which could be seen only two or three years. They were in stripes, which broadened, coalesced, and developed in a regular lamellar cataract. In such a positive case, where the successive stages could be followed, it is difficult to ascribe

an—even partial—influence to the tetany. For future studies in this field, I would propose to examine the interior of the eyes in rachitic children.

PLEXIFORM NEUROMA OF THE ORBIT.

By Drs. CHAS. H. BEARD and E. V. L. BROWN, Chicago.

(*With one text-plate, in violet monochrome, No. III.*)

ACCORDING to Terson, of Paris (*Encyclopédie française d'ophtalmologie*, vol. v., p. 545, 1906), Valentine Mott, among the published reports of five cases of what he termed *pachydermatocele*, in one instance described the clinical features with sufficient exactness to warrant its being recognized and classed as a plexiform neuroma. This was prior to 1850. The first to have a more definite understanding and to give a more intelligent description of this form of growth was Verneuil, who gave it the name it now bears. Verneuil reported two cases, one affecting the skin over the cervical plexus, and the other that over the sacrum. The first case in which the seat of the tumor was the region of the eye was published by Billroth in 1863, and with it appeared also the first description of the microscopic findings. Billroth lengthened the name by calling it *plexiform neuro-fibroma*. Bruns, who in 1870 reported five cases, suggested two appellations, viz., *neuroma elephantiastica*, because of its supposed relation to elephantiasis, and *neuroma cirsoideum*, because of the characteristic appearances of the pathologic anatomy.

Plexiform neuroma is a rare affection, not to exceed forty cases having thus far been reported. Of these only one previous case has been published in this country,—not taking into account those of Mott, just alluded to. This was by De Schweinitz, of Philadelphia, in the *Transactions* of the American Ophthalmological Society, xxvii., 1891. As regards its favorite seat, this variety of tumor is peculiarly a

subject of study for the ophthalmic surgeon, since the temporo-palpebral region, or the orbit, is the part involved in eighty per cent. of the cases. Invasion of the orbit occurs in about one-eighth the entire number. Those not in the immediate vicinity of the eye are situated, for the most part, either at the nape of the neck, on the back, or on the arm.

Our case in point is that of Dr. G. R., age thirty-seven. The patient, himself the picture of health in other respects, manifestly and avowedly free from syphilitic or other taint, comes of healthy parents, and is one of some six or seven robust children, of both sexes, the whole family being yet alive. No other member is the subject of any sort of tumor. Dr. R. consulted me first in December, 1902, relative to a growth in the right orbit. He had been aware of its presence for only about five or six years, though a photograph, taken fourteen years previously, showed unmistakable prominence of the right eye. The right upper lid is thick and drooping, and the skin covering it is deeply pigmented. The conjunctiva and the globe are normal in every respect, save that the latter is displaced downward and forward. The vision is $\frac{20}{20}$ and the fundus presents no anomaly. The left eye is normal. Palpation reveals a tumor whose most prominent part is just beneath the central portion of the upper rim of the orbit, and which, apparently, extends deep into that cavity. The tumor is elastic, but rather firm to the touch; neither it nor the exophthalmos is reducible; pressure upon the mass gives pain. No *bruit*, no pulsation. There is no adenopathy about the face, though there are a number of small hard knots, or gristly bunches, to be felt in, or rather beneath, the skin of the right temporal region and in front of the ear. Some of these bunches are sensitive, and are often painful, particularly after long continued use of the eyes in near vision. The patient had noticed these nodes long before he knew of any disturbing element in the orbit. He had observed the first appearance and the development of several of them. During the period of growth and for a considerable time after attaining full size, they were sensitive and painful, as stated; then, gradually, they became less so, until all sensation in them disappeared. There is no loss of function in the nerves supplying the skin of the affected area. There are no new growths on other parts of the body. The left eye and its appendages are normal.

Surgery was mentioned as the probable resort, and the patient departed, not to return until the 11th of the following May. The exophthalmos, the thickening of the lid, the pigmentation, and the ptosis were all accentuated; the vision reduced to $\frac{20}{40}$–1 and in addition the retinal circulation showed slight signs of stasis. Immediate extirpation was advised, but the patient went away to consider. Nothing more was seen of him till May, 1904, when the above symptoms were still more pronounced, and the sight reduced by strangulation to $\frac{20}{60}$. Extirpation was again urged, and this time consented to, and the same performed May 18, 1904.

The Operation.—The supercilia were shaved and an incision made, beginning at the median line between the eye-brows, and extending outward over the rim of the orbit and then downward to a point opposite the outer canthus. The incision was carried through all the tissues down to the periosteum. On opening the wound the tumor presented at once as a smooth, red mass. It was readily loosened; yet back near the sphenoidal fissure it was tightly adherent and its removal proved delicate and laborious. Bleeding was profuse. Its size was about that of the average thumb,—its greatest dimension lying fore and aft,—*and it was enveloped by a rather dense capsule.* The roof of the orbit had become dome-like, to accommodate the growth, and at the centre of the concavity was a round depression caused by erosion of the outer table of the bone which would easily accommodate the tip of the finger. The lachrymal gland was not involved. The tumor was but slightly attached to its capsule, and was about the color and consistency of hog-fat. It broke up upon handling, the fragments being held together by what appeared to be the trunk of a hypertrophied nerve (the supraorbital) running longitudinally through the mass. The cavity was washed out with sublimate solution, the opening in the *septum orbitale* was closed with catgut, and the skin sutured with silk. Recovery was rapid. The eye retreated, the ptosis disappeared, and vision returned to normal. The only nerve that lost its function was the supraorbital.

Diagnosis of plexiform neuroma was made by Dr. Brown, to whom a portion of the tumor was consigned, and whose report is a part of this article. The patient was last seen on October 10, 1905. There was at this time no evidence of a recurrence of the orbital growth; the right side of the forehead was still numb; a

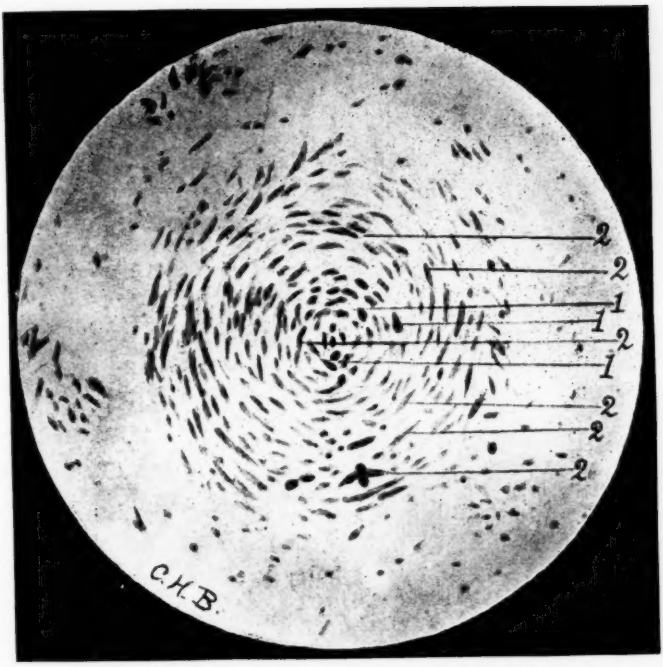
single new nodule had appeared in the skin near the right pre-auricular gland, while the old nodules scattered about beneath the adjacent skin were still present. The pigmentation of the skin of the upper lid remained unchanged, but the thickening and heaviness were gone. A study of the pathologic condition follows.

Gross Findings: (P. 102.) The tissue is a lobulated, roundish mass of tissue-strands, some 5*cm* long and 2*cm* wide; the various strands are encapsulated and present fusiform varicosities.

On cross-section, each strand is found to consist of a well defined peripheral whitish zone or cortex, of a consistency varying from that of gristle to that of a hard-boiled egg, and surrounding a dark-brown centre or core.

Microscopical Findings. — Longitudinal sections show the strands to be made up of an outer and an inner zone; the outer is limited by a narrow fusiform-cell membrane beneath which lies a broader connective-tissue sheath containing many empty blood- and dilated lymph-vessels; the inner zone is composed of nerve substance everywhere altered in structure; where most closely resembling normal nerve, the individual fibre bundles are very wavy in outline, much distorted in their course, and often separated by an interval equal to their own width. Such approximately normal structures are often abruptly succeeded by larger areas, in which there is a marked cell-increase at the expense of the nerve fibres, so that they can only be identified with difficulty or not at all. In the transition zone are seen beads or chains of overlapping empty vesicular elliptical structures, with highly refractile contours, representing segments of degenerated nerve fibres. This degeneration becomes very marked in certain areas: the spaces assume an oval form, and the whole nerve substance gives way in large measure to a lymph-ectasiac reticulum. The cell elements in the areas from which the nerve substance has disappeared are greatly increased in number and densely packed together. The cells are of two forms: (*a*) long, narrow, fusiform cells staining heavily on cross-section; (*b*) large, round, faintly staining epithelioid cells.

On cross-section, the tumor strands present the same details of structure, with the addition of very striking nests of pearls of the closely packed round fusiform and epithelioid cells described above (see Text-Plate III). These have no special location with respect to particular areas of the tissue, but occur as well in the



TO ILLUSTRATE THE ARTICLE BY DRS. BEARD AND BROWN ON PLEXIFORM NEUROMA OF THE ORBIT.

An area of proliferation within the nerve, showing a central swirl and a zone of myxomatous degeneration. (Zeiss obj. DD., oc. 2.)

1. Proliferating endothelium of the lymph vessels.
2. Proliferating endo- and perineural connective-tissue cells.

outer zone as in the inner although they are more numerous within the denser core of proliferated cells, among which many incompletely formed nests can be seen. The nests in the zone outside the main central area of cell-increase are sharply circumscribed, and may well be accounted for on the basis that they are branches of the main nerve to which the process is extending.

Anatomical Diagnosis.—Plexiform neuroma of the supra-orbital nerve.

In the cases reported in the literature to date, one finds the nodes or main clinical feature described in various and ingenious ways: thus, they have been likened to tortuous atheromatous arteries, to knots of catgut filled with hard material, and to tangled strands of gristle. They represent, in fact, the degenerated branches of the fifth nerve. And between the strands is found on anatomical examination a deposit of yellowish white material of the consistence of a fatty tumor. It is rather singular that Terson, in the article alluded to at the beginning of this paper, states that "the skin which covers the tumor [in plexiform neuroma] is remarkable by the absence of its pigmentation," whereas most authors, and our case, testify to the contrary, *i. e.*, that pigment is present in excess of the normal amount.

An important clinical sign of plexiform neuroma is the extreme indolence of the growth—or its freedom from pain and from all signs of activity. In the case herewith reported, however, the growth had been unusually rapid during the last few years. This form of a tumor is thought to be, as a rule, congenital. Of the cases published by Bruns, three were sisters whose mother had had multiple neuroma. The case of plexiform neuroma reported by Mr. Treacher Collins is the fourth of its kind to be associated with hydrophthalmos. The microscopic examination showed that, along with the plexiform neuroma, there was elephantiasis, both being congenital. Indeed, this is only one of a number of such instances, and several authors, in particular Emanuel, have considered the tumor under discussion but a variety of elephantiasis. Terson says that, in so far as it consists in a hyperplasia of the nerve-fibre coverings and

that of their supporting tissue, it conforms to one recognized kind of elephantiasis. Authorities are divided as to the point of departure of the new growth in plexiform neuroma, the majority affirming that it is the connective-tissue sheaths of the nerve fibres, and that epithelial elements are not conspicuous. On the other hand, perhaps, the more recent studies show it to consist largely of a proliferation of the walls of the vessels, thus approaching what is known as endothelioma or cylindroma.

The detailed anatomic findings in our case are probably best explained along the lines laid down by Hanke for this condition.[1] According to this author such soft, not sharply circumscribed, orbital tumors often grow to extensive lobulated masses of convoluted gristly strands of varying size beneath the normal skin—in the case under consideration the tumor extending along the supraorbital nerve from the supraorbital ridge to the sphenoidal fissure. Erosion of the adjacent bony wall occurs from pressure. The growth is often congenital and may follow trauma; operative procedures may cause it to increase, or it may spontaneously increase or decrease in size; in the late degenerative stage, the mass may fluctuate on palpation. Hanke considers that it is probably a primary hypertrophy of nerve-fibres followed by a degeneration which in turn excites a proliferation of the fusiform endo- and peri-neural and connective-tissue cells; these cells forming a closely pressed cell-rich swirl, or core, and about which there is a second zone of perineural cell-increase. Between and among these two groups of cells are larger endothelial cells, poor in protoplasm and derived from the endothelium of the hyperplastic lymph vessels and spaces. The nerve-fibre degeneration and the dropsical condition of the entire trunk reduce the nerve at length to a soft, myxomatous mass within the epineural capsule.

These tumors are very generally regarded as non-malignant, yet they will recur if not absolutely eradicated. If we are to believe a strangely precise statement made by Garré, "In $\frac{1}{8}$ of 1 per cent. of the cases, sarcomatous degeneration takes place."

[1] *Arch. f. Ophth.* lix Bd. 2, p. 315, 1904.

It will be observed that the tumor treated of here was enclosed in a strong capsule. This caused it to seem firm and elastic to the touch. Moreover, it made of this particular case an exception, in that these growths are, as a rule, not sharply circumscribed, and that they usually feel soft on palpation—like a lipoma,—or, as Panas expresses it, they have a *doughy* feel. They sometimes attain considerable size—as large as a hen's egg, or larger. Their treatment is pre-eminently surgical.

A CASE OF PARINAUD'S CONJUNCTIVITIS, ACCOMPANIED BY ERYTHEMA NODOSUM AND TONSILITIS; WITH A SUMMARY OF THE THIRTY FOUR REPORTED CASES.

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IN 1889, Parinaud[1] described a rare form of conjunctivitis which he considered to be of animal origin. The distinguishing features of the disease consist in the formation of superficial ulcers and pedunculated masses of the conjunctiva, small yellowish nodules in the subconjunctival tissue, and an enlargement of the pre-auricular gland, which in cases may break down and form an abscess. The disease is almost always unilateral and the cornea is uninvolved.

The writer has recently seen a case of this disease, and as up to this time there have been but thirty-three other cases reported, it seems advisable to place this one on record.

Mrs. J. F. W., a housewife, age thirty, consulted the writer September 19, 1905, and from her the following history was obtained. Eleven days ago (Sept. 8th), on awakening, the lids of the right eye were found to be swollen, and the eye could be opened only with difficulty. The same day, swelling and tenderness were noted over side of face, just in front of right ear. On September 14th and the following day or two, she had some pain over side of head, accompanied by general malaise. The eye was red and there was a slight watery discharge, also some itching, but no pain or photophobia.

Patient describes condition as being like an attack of the grippe. She was in bed one day. The eye gradually became more injected and the œdema of the lids more marked. The

swelling over right side of face increased, and mastication was painful. There had been no change in the condition four or five days previous to the examination made by the writer.

Examination (eleven days after onset) was as follows: O D: There is œdema of both lids, with marked ptosis. The skin is tense and smooth, but not red. There is profuse lachrymation, but no photophobia. The bulbar conjunctiva is much injected and chemotic. Conjunctiva of the upper lid is moderately injected. On the inner half there is a grayish oval area, 6 x 8 *mm* in extent, slightly raised above rest of conjunctiva. The surface of this is roughened and there is a loss of tissue. There is a similar but smaller area on outer portion of lid near the margin. The lower lid shows several translucent whitish areas, 1–3 *mm* in diameter; no ulcers or granules are present.

Beneath the chemotic bulbar conjunctiva are numerous gray translucent masses from ½–2 *mm* in diameter. These are especially numerous on the portion corresponding to the palpebral fissure. At the limbus (inferior nasal portion) are two white masses, raised above the level of the conjunctiva and cornea, each 3 *mm* in diameter. The cornea is uninvolved; vision=⅔. Left eye white. The region over the right parotid and pre-auricular gland is much swollen and tender. The skin is tense and white. Both submaxillary glands are enlarged. The tonsils are red, swollen, and painful. Temperature 100.2°F. with depression and malaise.

On September 21st, the masses in the subconjunctival tissue had become more opaque and of a yellowish color. Under local anæsthesia several of these were excised and the conjunctiva closed with sutures. The following day the eye showed less injection, the chemosis was not so marked, and the patient said that she felt better. The temperature, however, remained elevated (100.5° F.).

On September 23d, several small red spots appeared on the skin over anterior surface left tibia, right patella, and left forearm. The next day these spots had become tender, roundish swellings, freely movable on the deep parts. The skin was tense and bright red. Similar swellings appeared in skin over right tibia and calf of leg. Diagnosis of erythema nodosum was made.

By Oct. 3d the skin lesions had practically all disappeared and the throat appeared normal. The eye was decidedly

better. There was no chemosis, the ulcers were healed, and there was moderate injection of the conjunctiva. The masses in the subconjunctival tissue were of an opaque yellow color and showed no signs of breaking down. About this time distinct fluctuation was noticed in the swelling over the pre-auricular gland. This was incised and a thin yellowish pus was evacuated, leaving a cavity 1 x 2 *cm* in extent. This was swabbed with pure carbolic and packed with gauze.

The patient returned home October 8th. At this time there were 6–8 small yellow nodules in the conjunctiva. The eye was almost white and the ptosis had disappeared. She was heard from October 30, 1905, at which time the eye was white and the incision into the gland had almost entirely closed.

The right submaxillary gland was, however, enlarged; duration seven weeks.

The tissue removed at operation was hardened in Zenker's fluid. Celloidin sections were made and stained with hæmatoxylin and eosin. The microscopic examination shows the subconjunctival tissue to be densely infiltrated with round cells. Plasma cells and large phagocytic epithelioid cells containing detritus and necrotic nuclei are numerous. One striking feature consists in areas staining deeply with eosin. Here the cells are necrotic and the nuclei show fragmentation to a marked degree. Numerous strands of fibrin are present in the areas. Capillaries are present in large numbers. Leucocytes are almost entirely absent in sections cut from the larger of the two pieces of excised tissue. Sections cut from the tissue removed from the limbus show a loss of epithelium, and in the necrotic areas large numbers of leucocytes are present. This nodule was probably an older lesion than the other, and as it projected somewhat above the level of the conjunctiva, had lost its surface from friction of the lid. The leucocytes were probably due to a secondary infection. Pus from pre-auricular gland showed staphylococci.

Verhoeff and Derby[3] have given the most accurate pathologic description of the condition. They lay special emphasis on the necrosis of the subconjunctival tissue and the absence of leucocytes. In addition to the histological examination, they made animal inoculations and cultures, with negative results. The same writers[3] have recently

reported a second case, with a review of the pathologic findings of all the reported cases.

The following are all the cases reported since Verhoeff and Derby's first paper.

CASE 1.—(Sterling and McCrea.[4]) Male (age ?). O D: inflamed, lids swollen, and ptosis for ten days. Examination showed marked œdema of the lids, ptosis, lachrymation, and photophobia. Palpebral conjunctiva thickened and injected. Dotted over it, and especially over the inner third, were papillary granulations, which were of large size in retrotarsal fold. Ocular conjunctiva red and irritable, no chemosis, and vision not affected. Ten days later chemosis appeared and pre-auricular and cervical glands became enlarged. Temperature 99.2–100°. Pre-auricular, submaxillary, and cervical glands incised and pus and necrotic tissue removed, followed by marked improvement. Duration three months. Cultures from parotid gland and conjunctiva showed a bacillus, probably xerosis.

CASE 2.—(Matys.[5]) Male, age forty. O D: became red and painful, lids swollen so that eye could not be opened. Bulbar conjunctiva was normal. Two weeks later chemosis was marked, and nodules, size of head of pin, present in conjunctiva. Much pain in eye. Temperature 38.2° C.; patient weak. Pre-auricular and submaxillary glands swollen. Two months later chemotic conjunctiva covered $\frac{2}{3}$ of cornea, which, however, was uninvolved. Pre-auricular and submaxillary glands incised and pus evacuated. Ten months before eye was normal.

CASE 3.—(Salva.[6]) Male, age sixty-five. Was switched in O S eight days previously by the tail of a horse. Examination: Lids (left eye) swollen; conjunctiva red, injected, chemotic. Slight exophthalmos, ocular movements diminished, and diplopia was present. Pre-auricular and parotid glands enlarged. Three days later, there were seen in the inferior internal quadrant and along the border of the inferior fornix about twelve small semi-transparent, red granulations, some tending toward yellow. Some of those were on bulbar conjunctiva; the caruncle was also seat of a granulation. The largest were size of pin head. No granulations on superior tarsus. Symptoms subsided and patient returned to work in about six weeks after onset. No suppuration of glands. Disease occurred in May.

CASE 4.—(Dunn.[7]) Girl, age seventeen. Lids (O S) became

swollen so that lid could be raised only with difficulty. One week later, gland below left ear was swollen but not painful. Examination showed much congestion in upper ⅓ ocular conjunctiva, upper cul-de-sac, and lid, with 2–3 rows of glue-like papillary excrescences studded over region of upper cul-de-sac. There was no pain, but there was excessive lachrymation and lids felt "sore." V=N. Onset of disease in September. Duration of ocular condition five weeks. Gland swollen two weeks longer.

Case 5.—(Ellett.[8]) Male, negro, age eleven. Duration of disease four weeks. Examination O S: lids swollen, muco-purulent discharge. Bulbar conjunctiva and cornea normal. Upper fornix occupied by 12–15 large flattened granulations, with whitish tops. Conjunctiva lower lid, thick and rough with granulations; cervical glands suppurated. Pre-auricular gland enlarged. Examination of sections showed granulations consisted almost entirely of round cells with new-formed connective tissue, and small necrotic areas showing nuclear fragmentation. Epithelioid and plasma cells were present. Duration ten weeks.

Case 6.—(Ellett.[8]) Boy, age eleven. O D: conjunctiva lower lid, red and thick. Scattered over it were 7–8 whitish nodules, size of follicle in follicular conjunctivitis, surface white and opaque. Fornices free. Few nodules present in upper lid, also in central portion of upper fornix. Slight conjunctival discharge. Pre-auricular and submaxillary glands enlarged. Sections of excised tissue showed granulation tissue packed with round cells. Duration one month.

Case 7.—(Ellett.[8]) Female, age eleven. O D: Patient seen one week after onset. Subconjunctival tissue near upper fornix became thick and having appearance of sand or minute frog spawn. Bulbar conjunctiva also involved. Several white, sharply defined plaques scattered over surface of conjunctiva in fornix. Pre-auricular gland swollen, hot, and tender. Glands in neck swollen. Duration one month.

Case 8.—(Posey.[8]) Male, (age ?) Surgeon just returned from Porto Rico. O D: onset six weeks previous, with œdema, muco-purulent secretion, chemosis, and granulations in conjunctiva. Three weeks later, pre-auricular and parotid glands became swollen and tender and later suppurated. Examination: Lids swollen; conjunctiva thickened, especially in fornices; there were pedunculated granulations. Bulbar conjunctiva injected and thickened. Cornea unaffected. Temperature elevated. Parotid was incised

and a small amount of pus evacuated. Submaxillary, retromaxillary, and cervical glands swollen. Patient was a subject of Malta fever. Duration twelve to fourteen weeks.

CASE 9.—(Griffin.[10]) Female, age fourteen. In November, O S became suddenly inflamed, attended by pain, photophobia, marked œdema of the lids, and profuse lachrymation becoming purulent in a couple of days. End of week acute condition had subsided, although eye remained red and irritable. Examination two weeks after onset: Situated on retrotarsal fold is a mass of polypoid granulations, between which were a few areas of superficial ulceration. One large granulation somewhat pedunculated and translucent, and several small granulations, reddish gray color and irregular outline, were present. Slight injection of the ocular conjunctiva. In three weeks after onset the granulations had disappeared. About this time the pre-auricular gland became enlarged and painful; similar condition of submaxillary and cervical glands. No suppuration. Duration five weeks.

CASE 10.—(Verhoeff and Derby.[9]) Girl, twelve years old, with history of swelling of upper lid, right eye, and swelling near angle of jaw same side. Examination, eleven days after onset, showed thickening upper lid, slight ptosis, no secretion, and slight conjunctival injection. Upper portion of bulbar conjunctiva was thickened, red, and contained small yellowish granules. Conjunctiva of lids was slightly injected. Duration four to five weeks. Microscopic examination showed cell necrosis and round-cell infiltration.

Goldzieher,[11] in a recent article, reports five cases considered by him to be examples of Parinaud's conjunctivitis. Three of those were reported eleven years ago and were not included in Verhoeff and Derby's series, as from Goldzieher's histologic reports they considered the cases to be examples of lymphoid hypertrophy. Verhoeff does not consider the other two cases to be examples of Parinaud's conjunctivitis.

In the British *Lancet*, Streatford,[12] an Indian surgeon, states that he has frequently seen a peculiar form of conjunctivitis among the coolies in the tea gardens of Upper Assam. This is characterized by marked œdema of the lids, injection of the palpebral and bulbar conjunctiva, and is accompanied by an enlargement of the pre-auricular gland. The disease is almost universally uniocular and occurs in children and old persons. The duration is from two to six weeks, although it may become

chronic and last two to six months. He has seen three cases occurring in Europeans. From this description the disease would seem to be identical with Parinaud's conjunctivitis.

SUMMARY OF THE THIRTY-FOUR REPORTED CASES.

Eye affected—Parinaud's conjunctivitis, is, with few exceptions, unilateral. In but two cases were both eyes affected. The significance of the fact that the right eye was involved in 21 cases, and the left eye in but 11 cases, is at present unknown. The possibility of transference of the infection to the eye by the hand seems probable. Most persons being right-handed, the corresponding eye would naturally be more likely to be infected.

Sex—The disease occurred 18 times in males and 16 times in females.

Age—The youngest patient was two years, oldest six years. The majority of cases were in young adults. Six cases occurred in children under ten years of age.

Locality—With the exception of one case—an officer in Porto Rico,—all occurred in temperate climates; 17 of these in France, 14 in the United States, and one each in Bohemia, Canada, and Porto Rico.

Season—The onset of the disease, arranged according to months, is as follows:

October, 8; November, 7; September, 4; July, 3; May, 3; 2 each in January, December, and June; 1 each in April and February; 1 case not stated; 24 cases occurred in the autumn and winter (September to February), and only 9 cases in the remaining six months.

Duration—The shortest case lasted two and a half weeks, the longest (Matys) ten months, the average time being five to eight weeks.

Suppuration of glands—This occurred in twelve cases and materially prolonged the duration of the disease after the eye condition cleared up.

Etiology—The etiological factor of Parinaud's conjunctivitis is unknown. There is no evidence to show that Parinaud's idea of its being of animal origin has any foundation.

The diagnosis of Parinaud's conjunctivitis, as a rule, offers no difficulty, as the course of the disease is entirely different from any other form of conjunctivitis. In the early stages it might clinically be confounded with trachoma, tuberculosis, follicular conjunctivitis, and lymphoid hypertrophy, as any one of these might be confined to one eye and be accompanied by an enlarged pre-auricular gland. In the two former conditions, the course of the disease would render the diagnosis certain. The presence of corneal involvement in trachoma and the ulceration and chronicity of tuberculosis would be of great importance in arriving at a diagnosis. Lymphoid hypertrophy and follicular conjunctivitis, and especially the former, might be mistaken for Parinaud's conjunctivitis. Microscopical examination would in any case clear up the diagnosis.

Treatment—The only treatment of any apparent value is destruction or removal of the nodules. Excision of these, followed by suture of the conjunctiva, is preferable to burning or caustics.

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A CASE OF ANTIPYRIN AMAUROSIS INDUCED BY ONE HUNDRED AND THIRTY GRAINS TAKEN IN FORTY-EIGHT HOURS.

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(*With two charts in text.*)

THERE seem to be only a few cases of antipyrin amblyopia on record. In the very exhaustive reference work recently published [1] only three cases are mentioned. In one case, a lady had taken fifteen grains of antipyrin, and five minutes afterwards became ill with palpitation of the heart and totally blind. The amaurosis lasted one minute only, and the sight was completely restored in three days. In the second case, a lady had taken fifteen grains after a meal, and three minutes later suffered from violent headache, tinnitus, vertigo, palpitations, dyspnœa, and cold perspiration. After twenty minutes she lost her sight, and the amaurosis lasted thirty minutes. In the third case, a man had been taking three tablets of antipyrin (ten grains *pro dosi*) at one-hour intervals, when he had an attack of migraine which came on about once a week. After several months his sight became blurred, but it is not said how long the amblyopia lasted.

In the first two cases, the transient amaurosis following after fifteen grains of antipyrin may well be attributed to idiosyncrasy; for Dr. De Schweinitz,[2] who experimented on himself with ten-grain doses, noticed no amblyopia, but only a visual disturbance similar to the scintillating scotoma frequently preceding an attack of migraine.

It seems then that antipyrin has no serious effect upon the

[1] *The Effects of Drugs and Poisons on the Eye*, by Dr. L. Lewin and Dr. H. Cuillery, Berlin, 1905.

[2] *Toxic Amblyopias*, p. 209.

eye if taken, as it usually is, only occasionally and in moderate doses. But if a large amount is introduced into the system, in a short time it can produce a profound amblyopia lasting many weeks, as the following case may show.

February 22d, 1905, Mr. K., age thirty-three, came to me with the following history: Has had migraine off and on for a number of years, as his mother had had before him. Had typhoid fever at twenty-three, with good recovery. For three years in succession had attacks which were declared to be rheumatic, consisting in extremely painful red spots on limbs and body, yielding to antipyretics. Such attacks lasted two or three weeks, not attended, as far as he knows, by fever. Two weeks ago suffered with severe neuralgic pains in the right side of the head and both eyes. Movements of the eyes caused sharp pain, but his sight was not disturbed, as he could attend to his desk-work comfortably. The pain then shifted to the other side and was not relieved by quinine and salic. acid of which he took 4 grains (of each) every 4 hours for 3 days. He was then given antipyrin in capsules containing 5 grains, of which he took 26 within a period of 48 hours. He noticed at the end of the course of antipyrin that his sight was failing and within 48 hours was practically extinguished. For 12 or 14 years he has been closely confined to clerical work; does not use liquor, but has been smoking to excess, using a pipe at his desk.

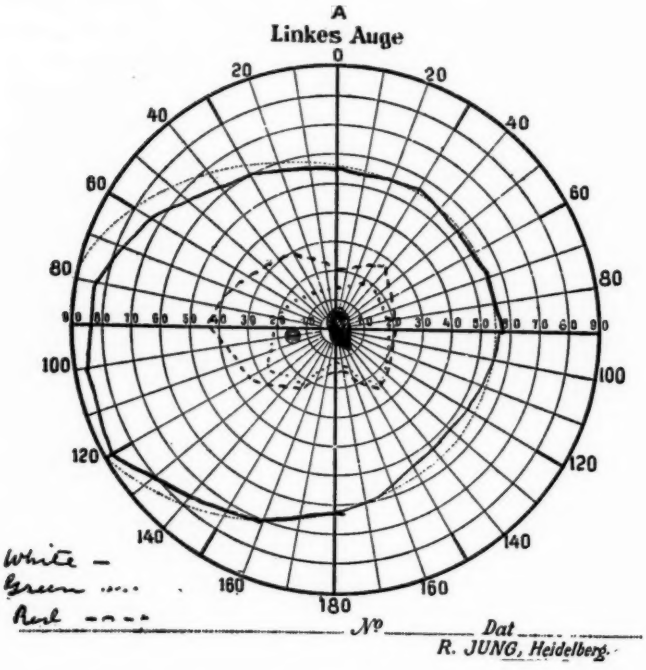
He can now see fingers in the peripheric field, but central vision is abolished. Eyeballs are not tender to the touch, pupils widely dilated, not reacting to light, and but faintly to convergence. Tension normal, media clear, temporal half of disk very pale, and retinal vessels very thin.

In order to ascertain whether there was any underlying lesion of the nervous system, I sent the patient to Dr. Church, to whom I wish to express my sincere thanks for his valuable assistance in the case. He reported his examination detected nothing abnormal in the nervous system, the reflexes were somewhat exaggerated owing probably to his taking strychnin, the heart action a little rapid and irregular.

The patient was put into a hospital, and treated with pilocarpine sweats, colonial flushings, and Blaud's pills.

March 1st.—Pupil active; no change in fundi. R E, fingers 4 feet; L E fingers in peripheric field.

March 8th.—R E, V $\frac{20}{70}$, calibre of retinal vessels almost normal, and disk shows better color. L E, fingers 4 feet; vessels still contracted and disk pale. Perimetric tests: R E, no scotoma, slight contraction of temporal form field, and marked contraction

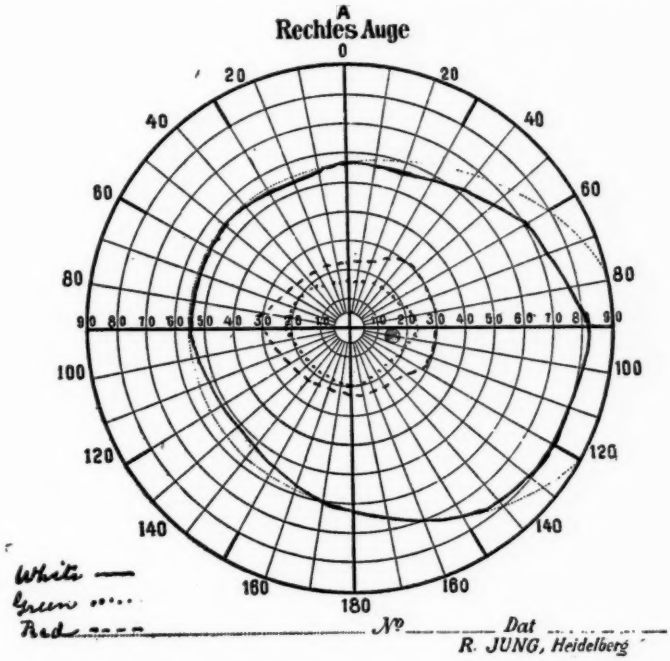


of color fields; L E, small central scotoma, an irregular vertical oval, slight contraction of temporal form field, and marked contraction of color fields.

The patient then returned to his home in Kansas, where he was further treated by Dr. J. C. Brown of Wichita, who reported under April 5th: R E, V $\frac{20}{30}$ and L E, $\frac{20}{20}$, normal fundi, and sent perimetric charts showing normal fields for form and colors.

As this patient has been smoking excessively, and had also taken quinine and salic. acid before the antipyrin, it might be questioned whether the amblyopia was caused by

the antipyrin alone. Aside from the sudden and rapid development, which speaks against tobacco amblyopia, and aside from the fact that the vision was undisturbed for several days after the use of quinine and salic. acid, the peri-



metric charts, I think, furnish the best evidence that tobacco and quinine were not the disturbing factors. In tobacco amblyopia, the visual field is not contracted, but central color scotomas are the rule; in quinine amblyopia, central scotomas are absent, and excessive contraction of the field is the rule; while in our case we had a slight contraction of the field and central scotomas. These findings and the sudden onset of the amblyopia directly after the use of the antipyrin point unmistakably to this drug as the cause of the amblyopia.

A CASE OF TRANSIENT LEAD AMAUROSIS.

By Dr. OTTO LOEWE, Frankfort-on-the-Main.

Translated from the German Edition, October, 1903, by Dr. Matthias Lanckton Foster.

TRANSIENT amaurosis, due to lead poisoning, is of the greatest rarity in comparison with the frequency of the toxic affections of other organs due to the same cause. The older writers, W. White, Beer, Duplay, and, above all, Tanquerel des Planches, furnished a number of articles on this subject, which are not to be absolutely neglected because of the absence of a differential diagnostic ophthalmoscopic examination, but up to the present time there have been only five observations accurately established by the help of the ophthalmoscope. Therefore it seems proper that every case of this nature should be put on record.

On January 13, 1903, a blind man, twenty-four years of age, was brought to the clinic and gave the following history. For two years and a half he had been engaged in work in which the workmen were greatly subjected to lead poisoning, in spite of the customary methods of prophylaxis, but without suffering himself. For the past week he had suffered from pain in the head and body and had lost his appetite, yet had continued working until the day before yesterday. The vision of his left eye had always been better than that of the right, so much so that in his military service he aimed with his left eye, but the vision of the better eye had not been perfect as he could not shoot at 500*m*. Until the evening of January 12th he had noticed no change in his vision, but during that night he struck a light and found to his horror that he had lost all perception of light. In the morning there was no improvement, so he sought the clinic.

Status, Jan. 13th.—Patient lies quietly in bed, fully appreciative of his condition and surroundings and gives clear answers. General condition of nutrition fairly good. Face red with a slight yellowish tinge. Respiration 18, pulse full and tense. Limbs freely movable; facial muscles respond promptly. No peculiarities of hearing, speech, or reflexes except the pupillary reflex. Teeth, for the most part, carious. Distinct grayish black gingival line. Marked fœtor of the breath. Abdomen neither swollen nor the reverse. Palpation painful, but revealed nothing. No changes in lungs or heart. Subjective symptoms: diffuse headache, some dizziness, colic, appetite bad, thirst fairly great. No movement of the bowels for the last four days, no micturition for a longer time.

Ocular Condition.—Motility of eye good. The glance is void of expression. The pupils dilated almost to the maximum and react but slightly. Conjunctiva somewhat yellow, cornea and other media clear. No pathological condition in the fundus, no anomalies of pigment or hemorrhages. The papilla and macula are intact, the arteries and veins filled as usual. Complete amaurosis.

Treatment.—Ice-bag to the head, castor oil, iodide of potassium, Priesnitz's wet pack to the body.

Jan. 14th.—Headache, nausea, and colic somewhat abated. The amaurosis and the anuria persist although the bowels have moved.

Jan. 15th.—On awaking, the patient could count fingers at 1*m*. Urine passed for the first time; contains traces of albumin.

Jan. 16th.—Counts fingers at 4*m*. Colic and nausea becoming less and less. Treatment unchanged.

Jan. 20th.—General condition much better. Counts fingers at 15*m*. No albumin in urine. Only a slight degree of icterus.

Feb. 1st.—The icterus, colic, and headache have almost entirely disappeared. Vision has returned considerably. Patient complains of dizziness and flickering before the eyes only on looking into the bright light for a minute.

Feb. 10th.—Patient is up several hours every day. Vision, left $\frac{6}{12}$, right $\frac{6}{18}$. Fundus, visual field, and color sense perfectly normal. Subjective condition good except that after walking or standing long the patient complains of weakness in the bones. Treatment, warm baths daily.

Feb. 25th. — Icterus and discoloration of the gums gone. Patient out of bed nearly all day.

March 5th.—Still a little dizziness on looking long in the light. General condition satisfactory.

March 14th.—Patient discharged, cured and able to work.

To establish the diagnosis of amaurosis saturnina, the following line of thought must be followed. A central affection only can account for the sudden onset of blindness with clear refractive media and absolutely normal ophthalmoscopic condition. The number of such affections which can bring about this condition is very small, and consists almost wholly of sudden loss of blood and toxic causes, excluding hysteria and the blindness which occurs in Jacksonian epilepsy. In hysterical amaurosis the pupillary reaction is always retained, and in Jacksonian epilepsy total amaurosis and undisturbed vision alternate. The red cheeks of the patient excluded the thought of a sudden loss of blood, and left remaining only the toxic forms of amaurosis. Among these, next to that of quinine poisoning, which was excluded by the history, the uræmic form is the most common, which is met with not so rarely in lying-in wards and is also sometimes observed in acute nephritis—for example, after scarlet fever. The dizziness, the headache, the nausea, and above all the anuria would indicate that uræmia was the cause in this case, while the fœtor of the breath and the well-marked discoloration of the gums point in a different direction. The differential diagnosis from uræmia can be best established in a discussion of the theories of lead amaurosis.

A review of the literature shows that the 60 or 65 reported cases of ocular disturbances due to lead fall into two very unequal parts, without reference to the cases of muscular paralysis, the more frequent permanent, and the transient cases of blindness. This division, already made by Günsburg from the clinical course, recommends itself because the pathological condition in the two forms is different, even though there are theoretically interesting transitional forms, as was shown by Paci's case. The division then is into:

1. Amaurosis or amblyopia with fundus changes, optic atrophy, or neuritis. In this class also belong the cases of

retrobulbar neuritis in which, despite the normal appearance of the fundus, the visual fields are contracted and there are disturbances of color perception.

2. Amaurosis of a transient character, which reaches its greatest intensity in from a few hours to a few days and then rapidly gives way to complete or nearly complete visual acuteness, in accordance with the declaration of Stoll over a century ago: "Amaurosis symptomatica morborum spasticorum, morbi hysterici, colicæ saturninæ, temporaria solum est et finito paroxysmo sponte evanescit."

The first form is certainly more common than is usually thought, for in patients suffering from encephalitis saturnina the complaints are very frequent of a reduction of vision. Recently I saw a temporal paleness of the optic nerve in a typesetter who came under treatment with discoloration of the gums, severe neurasthenic symptoms, loss of memory, halting speech, and general cachectic symptoms. This blindness, based on positive fundus conditions, lies outside the scope of our work, and lacks to the investigator the stimulation afforded by the transient form, frightful in its very sudden appearance, obscure in its causeless disappearance. Yet between the two there is a transition form in which the blindness comes and goes at brief intervals, but after some months results in a high degree of amblyopia or amaurosis through gradual atrophy of the optic nerve. An interesting example of this is the case reported by Paci in *Lo Sperimentale*, xxxvi., of a soldier who had a bullet in his humerus, which at the time of its extraction had caused a transient blindness, but after its removal went on to complete amaurosis.

Now as to the etiology. The similar clinical histories given by six authors show that we have to deal not with an accidental symptom-complex, but with one indicative of a certain disease. Hirschler's, Haase's, Schubert's, Hirschberg's Günsburg's, and my cases all followed the same course. After general prodromal feelings of illness, all perception of light disappeared within a few hours, with increase of the symptoms of headache, dizziness, colic, even delirium. The pupils were dilated and reacted somewhat to light. In the

fundus no change, or only unimportant ones, insufficient to explain the loss of sight, such as distension of the retinal veins, and grayish red discoloration of the papilla with hazy margins. The amaurosis retrogressed in a few days. In most of the cases there were traces of albumin in the urine; in Günsburg's, hyaline and fatty casts.

The explanations advanced may be divided into three groups: one assumes nervous disturbances, another uræmic amaurosis due to lead poisoning, the third that a sudden ischæmia renders the eye incapable of performing its functions. There is no proof of the correctness of any one of the theories. Autopsies have not been obtained, except in the case of Tanquerel des Planches, and the result of this was negative. It is, as Walther said, an amaurosis in which the patient sees nothing and the physician also sees nothing.

The most unsatisfactory of the three theories is the first, which contents itself with obscure conjectures of functional affections of the nervous organ. That the profound Tanquerel des Planches should rest contented with such a theory may be explained by the state of knowledge at that time. The somewhat less elementary theory that was based on the demonstration of lead in the brains of poisoned men and animals was at best the first step toward an elucidation. Leber assumed that the lead, which normally is excreted by the kidneys, remains in the body during a temporary insufficiency of the latter and produces amaurosis by direct irritation of the nerves, a theory which also bears the mark of improbability.

Much more impressive than this old theory is the thought of a uræmia, which Traube appears to have been the first to suggest. But that experienced clinician had certainly never seen a case himself, for his profound method of research would not have allowed him to be deceived by the superficial resemblance. Yet the clinical picture, or rather a number of the prominent symptoms, renders it quite seductive. A patient who has been suffering from headache, nausea, and perhaps vomiting is seized with absolute amaurosis during an exacerbation of these symptoms. Urine is suppressed or scanty and contains traces of albumin, some-

times epithelial casts. The diagnosis of uræmia is ready. The history of occupation seems to favor it. Recently von Leyden published a large series of cases in which after working in lead a long time nephritis appeared as a symptom of the so-called lead kidney. And yet this diagnosis is erroneous. For, aside from the fact that the apparently characteristic prodromal symptoms may serve equally well as symptoms of lead poisoning, a noteworthy point must be taken into account, that in almost every case there was not the slightest haziness of consciousness, to say nothing of a comatose condition or of convulsions. And what physician will believe that a urine which contains scarcely demonstrable traces of albumin, and often not a single cast, comes from a severe case of uræmia? Add the always favorable outcome and the complete disappearance of the albumin, which would be excluded in a chronic lead kidney. Traces of albumin occur in almost all cases of poisoning and in almost all acute diseases, when poisons or toxines are excreted through the kidneys. Moreover if one tries to explain a very obscure case of the greatest rarity by calling in another extreme rarity, such as uræmic amaurosis, he calls upon the Devil to throw out Beelzebub. It is certainly difficult to explain the anuria or oliguria, but perhaps the suppression of urine might be due to the increase of water in the intestine, rendered cord-like by the colic and the consequent reduction of the secretion of urine, while on the other hand a slight irritation of the kidneys by the concentrated urine would explain the slight traces of albumin.

The third theory, the correctness of which I shall try to demonstrate, rests on the physiological action of lead in producing spastic contraction of smooth muscle tissue. Most of the symptoms of saturnismus can be explained by reference to this fundamental property. Thus Riegel demonstrated sphygmographically that, long before the onset of the subjective symptoms of lead colic, an increased tension was to be found in the arteries. During colic the sensibility of the intestine is inversely proportional to the tension of the arterial vascular system. The consequence of the spasm is ischæmia, and through that diminution of peristalsis, which is

synonymous with obstipation. The painfulness is due to the ischæmia, as has recently been shown by observations on angina pectoris. The cerebral disturbances may easily be ascribed to the chronic anæmia of the brain; the persistent spastic contraction brings about similar symptoms to those produced in syphilitic endarteritis by the gradual stenosis of the cerebral arteries by proliferative inflammation. In both cases we find on autopsy diffuse fatty degeneration of the ganglia and encephalitic foci accompanied by proliferation of connective tissue. Now we know how sensitive our eyes are to sudden loss of blood after injuries of the great arteries, after profuse gastrorrhagia, in atony of the uterus, and placenta prævia. Günsburg properly objects that in Hirschler's case alone were any signs to be seen in the fundus which would indicate that the quantity of blood varied from the normal, but we use for the perception of light not only the eye but also the conducting apparatus and the visual centres. It is well known that the brain responds promptly to a bad supply of blood, and also that a complete restitutio ad integrum takes place if a sufficient collateral circulation is established. The question arises why the function of vision alone should be affected by this uniform spasm of all the arteries, why a paralysis of the extremities, or of the respiratory centre, is not simultaneously produced? The answer to this question may be obtained from a study of the vascular supply of the brain. In every anatomical atlas of the brain, it is striking how poorly supplied with vessels is the occipital lobe, and especially the cuneus, in comparison with all the rest of the brain. A relatively slight disturbance, as a spasm of the arteries, suffices to produce a temporary insufficiency of the brain, especially when a primary weakness of the visual apparatus is present, the presence of which in our case may perhaps be conjectured from the probably congenital amblyopia. This explanation also gives us the key for those cases in which the blindness did not retrogress, or recurred after an interval of some weeks and then became permanent. In these cases, either in consequence of insufficient treatment, or from the intensity of the poisoning, the spasm of the vessels did not retrogress, or recurred after a

short interval and brought about a descending degeneration of the conducting apparatus. This theory of the origin of blindness is not contradicted by conditions of cloudiness and swelling of the optic nerve, which Stood took to be hydrops of the sheath of the optic nerve, yet as a consequence of the arterial spasm a venous stasis should be expected, which sufficiently explains the dizziness, the headache, and the flushed face. Wolf has shown that very analogous cases of acute deafness are to be explained by an acute hydrops of the labyrinth.

THE ACTION OF ALYPIN, A NEW ANÆSTHETIC, UPON THE EYE.

By Dr. ED. HUMMELSHEIM, Privat-Docent at Bonn.

Translated from the German Edition, LIII., 1, October, 1895, by Dr. Ward A. Holden.

RECENT years have brought us a number of agents with which one sought to obtain the anæsthetic effects of cocaine while avoiding its unpleasant or dangerous effects. The latest of these new remedies is alypin, which, at the suggestion of Prof. Dreser, I have used in comparison with cocaine in the normal eyes of children and adults. The test of the anæsthesia was made by touching the cornea with a blunt instrument. The results proved on the whole to be alike for the two agents. In a few cases, for a time the alypin eye was found to be less sensitive than the cocaine eye, and in rather most cases the contrary was true, but usually there was no difference.

The centre of the cornea was found to be more sensitive than the periphery, as is the case in the untreated eye. After several instillations of the drug this difference was abolished.

Pharmacological tests by the manufacturers had shown that alypin is only half as toxic as cocaine. Usually cocaine dropped into the conjunctival sac causes no toxic symptoms. It would have been interesting, however, to have made comparative tests with patients, such as are occasionally seen, in whom a few drops of 2 % cocaine solution in the conjunctiva causes weakness or fainting; but in the short time during which the experiments were carried out no patient of this sort was under observation.

As regards the reaction of the vessels, it may be said that

there is dilatation in most cases, there being circumcorneal injection for a period ranging from five to thirty minutes.

The instillation of a 2 % solution causes a slight burning sensation for a minute or two, sometimes more pronounced, sometimes less than after the instillation of cocaine. Even a 10 % solution causes only moderate smarting.

Dilatation of the pupil is not produced by a 2 % solution. A 10 % solution causes some dilatation, but the light reaction is preserved. The mydriasis caused by strong solutions may pass off quickly or may last for hours.

The accommodation is affected but slightly and only for a short time.

The intraocular tension, which is generally believed to be reduced by cocaine, seemed to me to be equal, in eyes in which alypin had been instilled, to the tension in eyes in which cocaine had been instilled, even when Fick's tonometer with Koster's modification was used. In order to eliminate the personal equation, I had alypin dropped repeatedly into one eye of a subject, while nothing was done to the other, and then tested the tension without being aware which was the alypin eye. In each case I found slight hypotony in the alypin eye. Furthermore, after using the tonometer on an eye into which 2 % alypin had been repeatedly instilled, a 10 % solution was used and a later tonometric examination revealed always a slight further lowering of tension. When we recognize that alypin reduces tension in an equal degree with cocaine, it would appear to be indicated in diseases which require reduction of tension without dilatation of the pupil, such as glaucoma. When used in 1 or 2 % solution, it does not require the addition of eserine as does cocaine.

One advantage possessed by alypin is the fact that it may be repeatedly sterilized without losing its efficacy. No difference was observed between the effect of a fresh solution and one boiled five minutes.

And so far as my experiments went I found no injury of the corneal epithelium even after the repeated use of 10 % solutions.

From what has been said, further experiments with alypin

seem indicated in cases of cocaine idiosyncrasy, as a reducer of tension in glaucoma, and as an anæsthetic in cases in which dilatation of the pupil and paralysis of the accommodation are to be avoided. The hyperæmia which it produces may be prevented by using adrenalin.

ABSTRACTS OF ARTICLES IN VOL. XLI. OF THE GERMAN EDITION, NOT PREVIOUSLY PUBLISHED.

By Dr. MATTHIAS LANCKTON FOSTER, New York.

I.—Anatomic and Bacteriologic Studies of Trachoma.

By Dr. **C. ADDARIO**, Palermo.

I.—STRUCTURE OF THE TRACHOMA GRANULE.

A SECTION through a trachoma granule shows a faintly stained innerspace with large cells and a well stained margin with small cells. In the smallest granules the innerspace is less developed and the margin broader than is the case in the larger ones. In both, the clear portion is usually distinct from the peripheric, as well as from a large number of closely packed cells which conceal any intermediate substance. Granules in the first stage of development are rare in which the proliferation of the centre is less marked, and the elements are not packed as closely as in the more developed ones. Such granules are usually situated deep under the adenoid layer, but may be found within it.

The granules first described are those of a diameter of about 0.24*mm* with clear innerspaces measuring 0.16*mm* across. The latter are filled with large cells and are surrounded by small intensively stained cells arranged in rows close together which fill long spaces in the loose connective-tissue stroma. The connective tissue contains fixed cells like those of the surrounding tissue. The lymphoid cells which fill the spaces are identical with those of the adenoid layer, with which the peripheral portions of the granules blend without sharp demarcation. The innerspace of a granule contains many cells which lie fairly far apart and allow a stroma to interpose itself between them. This stroma arises from peripheral connective-tissue trabeculæ which, by continual subdivision toward the centre becomes constantly smaller until

reduced to two or three cellular elements, between which can be traced the last fibrillary ramifications, or the last offshoots of the protoplasmic processes of the connective-tissue cells. Well developed granules which appear to be homogeneous contain an intercellular network composed wholly of connective-tissue fibres. The fixed cells have become separated from the connective-tissue stroma through their hypertrophy and are connected with it only by slender processes of protoplasm.

The fixed connective-tissue cells at the periphery of the initial granules are small, spindle-shaped, in some places triangular. The cells in the clear innerspace are for the most part flattened, of epithelioid appearance, and contain little protoplasm with faintly stained, rather granular nuclei, perhaps twice as large as those of the peripheral cells, some round or oval, some of irregular form. Some have in addition to the large nucleus a smaller one, perhaps a fifth as large, and among them nuclei undergoing mitotic division. All of these are to be considered as different stages of the lymphoid cells described in the periphery of the granule. Between these formations can be seen a moderate number of larger elements with oval or round, pale and homogeneous nuclei containing one or two nucleoli. These are three or four times as large as most of the cells in the centre of the granule and may be distinguished by their protoplasm. Some are in the stroma, some are irregularly stellate and touch the connective-tissue fibres only with their processes, others are provided with long, slender processes of protoplasm which extend far from the cell bodies. Certain of these contain in the protoplasm corpuscles which are so strongly stained by hæmatoxylin that their color is not to be distinguished from that of the karyokinetic figures found in the lymph cells of the neighborhood. These corpuscles are of various shapes and always surrounded by a little clear zone. These large cells, with corpuscles or not, are present in considerable numbers in very young granules and become less numerous later. The presence of transitional forms indicates that these cells belong genetically with the stroma. The cells with large processes of protoplasm seem to be fixed connective-tissue cells which have greatly increased in size and thereby become separated from the stroma. They are identical with Villard's phagocytes and large cells and with Leber's corpuscle cells. They are found in trachoma granules and in normal lymph nodules.

Trachoma granules do not differ in structure from the normal lymph nodules found in other mucous and serous membranes. The trachomatous process is characterized by the peculiar development and retrogression of the lymph nodules. Lymph nodules normally found in mucous and serous membranes have no certain form and their presence is transient. According to Fleming and Marchand they start in circumscribed places whereever and however the lymphoid elements begin to proliferate. It is not necessary that a physiological nodule should precede the trachoma granule, and therefore it is superfluous to search the normal conjunctiva for a physiological basis from which the granules should develop.

II.—DEVELOPMENT OF THE TRACHOMA GRANULE.

The clear innerspace of a trachoma granule somewhat larger than those just considered possesses all the characteristics of the central part of a lymph nodule. It is composed of lymphoid elements which are roundish or flattened by pressure and contain large nuclei, a fairly large number undergoing karyokinesis. Blood-vessels which were absent in the initial granules are now present. The stroma is obscured by the density of the cells. The periphery contains smaller elements than the innerspace with a much greater number of granular and intensively stained nuclei than in the initial granules, but they are not so densely packed as c onceal the stroma, which blends with the connective tissue of the neighborhood and is provided with fixed cells.

In a still more advanced stage the central part is very large in comparison with the marginal zone, which has shrunken to a thin dark shell, the same as that about a lymph nodule. The surrounding connective tissue forms no capsule and has no immediate relation with either the lymph nodules or the trachoma granules. In the stage of involution the trachoma granules are surrounded by fibre cells, but this is a cicatricial formation, not a capsule.

There are numerous divisions of the nuclei in the clear innerspace. The large connective-tissue cells are farther apart and nearly all contain the corpuscles described above, which seem to have increased in number and are of various sizes. Together with these can be found in some cells little hollow spheres the walls of which are formed from three intensively and evenly stained symmetric shells separated from each other

by transparent interspaces. Often the segments are two hemispheres separated by an equatorial transparent zone. Both forms resemble the condition described by Arnold as degenerated nucleus segmentation or fragmentation of the nuclei of lymphoid cells in acute hyperplasia of the lymphatic glands. Probably they are nuclei undergoing destruction and the so-called corpuscles are remains of such nuclei. This idea is supported by the presence of transitional forms. The large connective-tissue cells usually contain more corpuscles in fully developed lymph nodules than in smaller ones, and cells which contain two nuclei may easily be found with one nucleus enlarged and containing corpuscles. The condition up to a certain point is that of a polynucleated cell in which one or more of the nuclei are undergoing destruction. Such cells may be found with two nuclei or with none at all.

In addition to the above there is to be found a small number of cells elongated and irregular in form which contain very little protoplasm, but several pale, homogeneous nuclei, each with a nucleolus. They seem to be connective-tissue cells and probably form a stage in the development of the large connective-tissue cells just described. The polynucleated cells described by Langhans could not be found, but there were present conglomerates of cells which might have been mistaken for them. The large connective-tissue cells also contain a large number of brownish-yellow pigment granules of varying size, such as were found by Fleming in lymph nodules.

Trachoma granules possess a moderate number of blood capillaries with simple endothelial walls, but no lymph vessels. In the periphery of small granules and of small lymph nodules, there were spaces filled with lymph cells which surrounded a great part of them so regularly as to resemble vessels, but the absence of a true endothelial wall proved them to be lymph channels.

In the developed granule, usually at its periphery, are a certain number of cells staining with gentian, which cannot be distinguished from the plasma cells found in the submucous tissue. Finally some cells undergoing necrosis are not rarely met with among the lymphoid elements.

The part taken by the epithelium, the submucous connective tissue, and the adenoid layer of the conjunctiva in the pathological process demands mention. When the granules are very

small, placed deeply, and protrude little if at all, the epithelium usually takes no part. The medium-sized granules carry on their free surfaces a delicate layer of adenoid tissue and epithelium, both permeated more or less by leucocytes. Over very large granules, this layer is thin and flattened. The submucous connective tissue is sometimes normal, sometimes infiltrated, as the trachoma is not, or is associated with secondary inflammatory changes. In many cases the adenoid layer of the conjunctiva is normal, but often it is changed, the changes varying from simple thickening to an energetic papillary proliferation. The latter is met with frequently in most mucous membranes and is due to diverse pathological causes. The presence of trachoma granules predisposes the mucous membrane to papillary proliferation in the same way as many other forms of irritation, and this in turn becomes a complication of the pathological process. Anatomical examination of cases of so-called papillary trachoma and of papillary proliferation in blennorrhœa reveals the same type of disease and no trachoma granules. In the mixed form of trachoma the granules lie each between the bases of two papillæ so that a part of its periphery is covered only by epithelium and a thin adenoid layer, a condition of importance in the explanation of the retrogression of the granules in this form.

III.—RETROGRESSION OF THE TRACHOMA GRANULE.

The surface of a large granule is usually covered by a thin layer of adenoid tissue and flattened epithelium. Its centre is permeated by regularly arranged spaces due to the necrosis and atrophy of many large connective-tissue cells. That they are due to this necrosis and atrophy is proved by the facts that most of these spaces have the same size, form, and arrangement as the spaces in the periphery which still contain such cells, that in some spaces a large cell may be seen undergoing necrosis, and that many corpuscles are to be found free among the lymphoid elements which occupy the centre. The lymphoid elements are, as a rule, well preserved, with an occasional small group undergoing coagulation necrosis. Often there is extensive softening in the centres of large trachoma granules and the capillaries of such granules often have thickened, homogeneous walls, but these changes are neither constant nor equally well marked throughout.

Near such granules are others of the same size which have ruptured so that portions of their contents protrude, while the

parts remaining within form lines toward the opening which continue directly out. This condition must be the result of a traumatism, such as rubbing the lids, which has ruptured and partially evacuated the granules. In the larger granules the rupture is favored by the partial necrosis, but medium-sized granules which are not softened at all also rupture, probably as the result of abrasions of the altered epithelium. In trachoma associated with papillary proliferation the granules rupture where they approach the surface between the bases of the papillæ.

Ruptured granules gradually empty themselves and collapse. The spaces thus formed, which communicate with the outer surface, become granulating and vascular and heal as open wounds by secondary intention, without a stage of acute ulceration. A new formation of connective tissue develops about and between the vessels which surround the granules, particularly from the adventitia. In the beginning of the process of restoration a rich proliferation of fine spindle cells about the vessel walls can easily be seen. These bundles of spindle cells often radiate about the periphery of granules which at first appear to be well preserved, but a careful examination always reveals a solution of continuity, or partial necrosis. Hence the process of repair begins pretty early. The proliferation gradually advances in the surrounding adenoid layer, there is a rapid new formation of fixed connective-tissue cells which finally become more numerous than the lymphoid cells, an intermediate substance gradually appears, and the process goes on to complete cicatrization, which ends the retrogression of the trachoma.

Trachoma may therefore be considered to be a chronic inflammatory process due to a specific cause, which appears in foci and is characterized by the new formation of lymph nodules, which atrophy in consequence of partial necrosis and more or less complete evacuation, and induce a new formation of connective tissue with consequent cicatrization in the adenoid layer of the conjunctiva.

IV.—BACTERIOLOGICAL INVESTIGATIONS.

Addario here describes the culture materials he has employed, and the various micro-organisms he has found in material taken from cases of trachoma. Nothing characteristic was found.

II.—Contributions to the Pathological Anatomy of Hæmorrhagic Diseases of the Retina.

By Dr. G. ISCHREYT, Riga,

I.—Thrombosis of a Branch of the Central Vein of the Retina with Subsequent Glaucoma.

One morning a man noticed an opacity before his right eye, which had previously been healthy. It appeared like a large ink spot that lay centrally on every object on which the eye was fixed. Fingers could be counted, but reading was impossible. Two months later a severe pain attacked the eye during the night and the fundus became invisible. Two days later the eye was enucleated for absolute hemorrhagic glaucoma following thrombosis (?) of the central vein of the retina.

Anatomical investigation revealed an extensive obliterating endarteritis, a localized phlebitis, venous hyperæmia, and thrombi in both arteries and veins. The hæmorrhages were partly of arterial, partly of venous origin, and were due in a general way to degeneration and faulty nutrition of the vessel walls.

II.—Septic Retinitis of Roth.

A woman twenty-four years of age, with no family history of hæmophilia, came under observation Nov. 11, 1898, and died Nov. 26th, of acute leucæmia. She had ecchymoses on the back and breast and signs of a hæmorrhagic diathesis on the gums. It was difficult to check the bleeding from a puncture, or a spontaneous nosebleed. The blood was very fluid and showed a disinclination to coagulate. The hæmoglobin on entrance was 40 %, but sank later to 25 %. On Nov. 11th there were two hemorrhages in the retina of the left eye and a plaque, but no hemorrhages in that of the right, and there was nothing to be noted about the papillæ. On Nov. 23d the papillæ were very pale, there were large and small, old and recent hemorrhages above and below both papillæ, partly covering the vessels and, in the region of the macula, interspersed with white patches of retinal degeneration, and at the posterior poles the retinæ were grayish or grayish red. No bacteria were found by the microscope. The central artery and vein were normal. There were no hemorrhages in the optic nerve, except in its intraocular portion. In the layer of nerve fibres the vessels were in general normal, nowhere distended or occluded by emboli or thrombi. The nuclei

of the endothelium were well stained, sometimes large, and protruding into the lumen in places sufficiently to block it. In places the walls were interrupted and allowed the escape of hemorrhages. Where the nuclei of the endothelium blocked the canal and there was no rupture, the surrounding tissue was œdematous. The hemorrhages were mostly in the layer of nerve fibres and in the ganglion-cell layer. The choroidal arteries were collapsed, the veins full, but not distended. In the choroid there was a little cellular infiltration. The ciliary vessels were normal. There was nothing of importance in the ciliary body, iris, cornea, or lens.

III.—Black Optic Nerves.

By Dr. **L. PICK**, Königsberg.

A girl seven years old was brought to the clinic on account of hemorrhagic retinitis. There was no cyanosis of the eyeball, the irides were greenish-gray, and the eyes were outwardly normal except for a convergent strabismus of the left. The left eye was highly myopic and amblyopic. The papilla was surrounded by a large mass of opaque nerve fibres. In the middle of the papilla was a dark brown, almost black, discoloration varied only by the red of the blood-vessels. The pigment was not compact, but was arranged in a radiating manner. About this black centre was a ring of white tissue, about this a slightly pigmented zone, and about this was the mass of opaque nerve fibres. The rest of the fundus appeared to be normal.

IV.—Coloboma of the Optic Nerve.

By Dr. **TERECHKOWITSCH**, Moscow.

A girl, fifteen years old, was operated on for a soft cataract which had developed in an eye that had previously possessed poor vision and had squinted. After the operation a coloboma of the optic nerve could be seen.

V.—Contributions to the Anatomy of Secondary Glaucoma.

By Dr. **A. SACHSALBER**, Graz.

The histological conditions found in five eyes with glaucoma

secondary to perforating processes of the cornea, with corneal staphyloma and scleral ectasia, were as follows:

First Eye.—The surface of the corneal staphyloma was covered by several layers of epithelial cells—cylindric, cuboid, and flat. There was no uniform demarcation between the epithelium and the basal membrane, but the former sent irregular processes into the subjacent cicatricial tissue. Vessels were fairly numerous in the peripheral portions of the scar, but were scarce in its central part. Half a millimetre from the surface was a second layer of scar tissue, poorer in nuclei. Between these two layers was a layer of what has been termed, by many authors, products of degeneration. The deepest layers of the staphyloma consisted of corneal lamellæ and Descemet's membrane with its endothelium. The anterior chamber was present only in the middle; laterally the iris was adherent to the cornea. Descemet's membrane was very thick, and a similar thick hyaloid layer passed over to the anterior surface of the iris, which regained its normal thickness at some distance from the place where it was adherent to the cornea. In many places the endothelium was much proliferated. Descemet's membrane extended in the scar tissue in close relation to the posterior pigment layer of the iris, even as far as the beginning of the conjunctiva bulbi. Schlemm's canal was absent. The anterior ciliary veins were large and their walls were much thickened. In the free portion of the iris the peripheral part of the basal membrane beneath the endothelium was much thickened; otherwise the tissue had a normal appearance on the whole, except for scattered inflammatory foci. The margin of the pupil was bound to the anterior capsule by posterior synechiæ. The sclera was very thin and contained products of degeneration. The ciliary body was flattened, chiefly at the expense of the reticular connective tissue, while the muscle retained nearly its normal dimensions. The ciliary processes were very atrophic, the superficial epithelium proliferated. Toward the ora serrata, a very cellular tissue, containing hyaloid deposits and granular light-brown pigment arranged in lines, lay on the epithelium. In the choroid there were various changes. In many places the membrane was very thin and the perichoroidal lymph spaces obliterated. The latter were also extensively adherent to the sclera, and in other places contained large plates of endothelial cells. In the stroma were numerous collections of round cells, some large, but mostly small. In the larger veins were

circumscribed thickenings of the endothelial layer. Within the endothelium, karyokinetic figures were present. There was endophlebitis of the vortex veins, the endothelial layer was much thickened and presented pearl-shaped masses which caused obliteration. The perivenous lymph spaces were almost completely filled by a thick endothelial layer and contained many detached endothelial cells. These changes were common to all four vortex veins. The optic nerve was totally excavated, the lamina cribrosa was rarefied and pressed backward, the optic fibres in great part atrophic, the interstitial tissue, as well as that about the vessels, proliferated and rich in nuclei. The ganglion cells of the retina were diminished, Mueller's fibres proliferated. The pigment epithelium, the capillaries, and the middle vessel layer of the choroid were atrophied about the papilla.

Second Eye.—The cornea was large and very thin. The epithelium was normal. Bowman's membrane showed dehiscences which were filled with epithelium and allowed some protrusion of the substantia propria. At one place it was wanting, and the stroma was replaced by cicatricial tissue. Elsewhere the membrane was preserved, but permeated by nuclei resembling those of connective tissue. The parenchyma of the cornea was normal. Descemet's membrane was largely absent, so the stroma came into immediate contact with the iris and its pigment epithelium. The tissue of the iris was very thin and consisted mainly of a layer of very cellular cicatricial tissue on which lay the pigment epithelium. A peculiar configuration was afforded by the union of the iris and its pigment layer with a new formation of connective tissue $2\frac{1}{2}$ *mm* behind the wall of the staphyloma so as to form a cone, the base of which was formed by a thick layer of very vascular connective tissue, rich in nuclei and containing numerous pigment cells. This layer pointed backward and finally ended in a cord formed of pigment cells which blended with the new formation. The anterior ciliary vessels were much dilated. The iris was totally adherent to the ectatic cornea; the ciliary body was flattened and the ciliary processes drawn out by the shrinking exudate. The epithelium of the ciliary processes was proliferated. The membrane which served to separate the anterior and posterior segments of the globe was composed of the ciliary processes, the fibres of the zonula, and some cortical fibres of the lens, with between them a vasculo-cellular connective tissue. The retina was detached at the ora serrata.

There were no signs of degeneration in the wall of the staphyloma or in the iris. The choroid was greatly thinned, most of its vessels obliterated. The suprachoroidea had disappeared. The stroma was replaced by a uniform layer of connective tissue with few vessels, permeated by numerous cells with and without pigment. There was periphlebitis of three of the vortex veins, with proliferation of the endothelium of the lymph spaces about them, but proliferation of the endothelium of the veins themselves could be found only occasionally. About the fourth vortex vein there were no such changes, and even the neighboring choroid appeared almost normal. The retina was in pretty good condition with large vessels and some fresh hemorrhages, the basal tissue proliferous or in some places wanting, the ganglion cells diminished. The papilla was excavated to its margin, the lamina cribrosa rarified and pressed back, the nerve fibres atrophic, the interstitial tissue proliferated and containing fatty degenerated cells.

Third Eye.—The wall of the staphyloma was folded and irregular, the thickness uneven. The epithelium was normal. The scar tissue was very cellular and vascular. The deeper layers were compact and poor in cells, though containing nests of cells here and there as well as scattered pigment cells. The posterior surface of the staphyloma was covered with pigment, but there was no iris structure in the posterior layers of the scar. The most peripheral part of the iris could be separated with difficulty from the cicatrix. There was no degeneration in the wall of the staphyloma. The conjunctival, ciliary, and episcleral vessels were distended in the scleral zone, and more peripherally on the sclera. The ciliary body and processes were stretched out, the former flattened. The choroid was thin and contained few vessels, but in many places dense connective tissue, and was in places adherent to the sclera. All the vortex veins were smaller than normal, the lumen diminished, the walls thickened. One was obliterated. The perivenous lymph spaces had disappeared. The retina was hyperæmic, its vessels distended. The ganglion cells were mostly lost, the granular layer well preserved, the layer of rods and cones irregularly arranged. Müeller's fibres were proliferated and thickened in some places, in others they were absent. The papilla was totally excavated, the nerve fibres atrophic, and the interstitial tissue proliferated with many fatty granular cells.

Fourth Eye.—This eye was enlarged in all meridians. The epithelium on the staphyloma was horny on its surface, but more deeply it was composed of larger succulent cells between which penetrated net-like processes from the horny layer. In a few places it was separated from the subjacent tissue. The cicatricial tissue was very firm with few nuclei. Beneath the epithelium was a not very deep zone of degeneration. In the deeper part of the wall of the staphyloma the corneal tissue was largely preserved, and Descemet's membrane appeared normal. The iris was everywhere adherent to the cornea, the tissue torn in many places, but the pigment coat never absent. The scleral zone was thin, the vessels distended with blood. The ciliary body was flattened, the muscle tissue diminished as well as the reticular connective tissue, the ciliary processes drawn out, atrophic, and covered with normal epithelium. The choroid was atrophic, the suprachoroidea changed to a dense connective tissue with quantities of pigment and adherent to the sclera. The endothelium of the vortex veins was not markedly proliferated, but the lymph spaces about them were narrowed by proliferation of the endothelium, the vessel walls were thickened, and the lumen of the veins was greatly diminished. One vein was obliterated.

Fifth Eye.—The eyeball was markedly enlarged. The wall of the staphyloma had a very irregular epithelial coat which penetrated in places into the scar tissue and in other places was very thin. From the superficial layer of flat cells nets with cuboidal cells having large bodies of protoplasm in their meshes penetrated the deeper layers. The epithelium was detached from the subjacent tissue. There were also epithelial nests separated from the superficial epithelium by a layer of connective tissue. Below the epithelium was a layer which presented various signs of degeneration. In the middle layer of the wall of the staphyloma these signs became less important and in the posterior layer had disappeared. Descemet's membrane was present in some places, absent in others. The iris was adherent to the thin wall of the staphyloma. The thickness of the iris was very uneven, it was frequently adherent to dense layers of newly formed connective tissue situated more deeply in the eye by means of pigmented cords. The transition into the ciliary body was not well defined, the ciliary body itself was flattened, the muscular fibres partially atrophic, the reticular connective tissue absent. The ciliary processes were involved in a very cellular cicatricial tissue

which formed a thick membrane between the anterior and posterior segments of the eye. The anterior ciliary vessels, particularly the veins, were much dilated. The entire space between the staphyloma and the above-mentioned membrane was filled with blood. There were many extravasations in the ciliary body and in the membrane. The vessels of the conjunctiva, sclera, and staphyloma were distended with blood. There was a cellular infiltration of the choroid which contained many extravasations. The condition of the vortex veins could not be demonstrated because of the hemorrhage, but there were signs of an occlusion of the perichoroidal lymph space and an agglutination between the sclera and choroid. The papilla was totally excavated. There was proliferation of connective tissue in all the layers of the retina, particularly in the layer of nerve fibres. The granular layer and the layer of rods and cones were torn by numerous extravasations. Ganglion cells were absent.

The most important point demonstrated was the close anatomical resemblance between primary glaucoma and secondary glaucoma with the formation of corneal staphyloma. The changes in the vortex veins and the perivenous lymph spaces are the same in each.

VI.—The Anatomical Basis of Alcohol Amblyopia.

By Dr. **A. SIEGRIST**, Basle.

Siegrist removed both eyes from the fresh cadaver of a man who had died of carcinoma of the stomach, for the purpose of obtaining some sections of a normal fovea, and found an unexpected condition which corresponded closely with the descriptions already published of that produced by alcohol poisoning.

VII.—The Possibility of an Objective Demonstration of Color-blindness.

By Dr. **G. ABELSDORFF**, Berlin.

Abelsdorff has observed the reactions of the pupils when the eyes were illuminated with light which had passed through red, green, yellow, and blue glass, and has found that in persons with normal color-sense the pupils are smaller in red light than in green or yellow, and smaller in yellow than in blue. In a protanope, or a person with red-blindness, the pupils were smaller in green light than in red, smaller in yellow light than in red, and

smaller in yellow light than in blue. The first two conditions were the opposite to those found in persons with normal color-sense, the third was the same. In a deuteranope, or person with green-blindness, the reaction of the pupils was the same as in persons with normal color-sense, smaller in red light than in green or yellow, smaller in yellow light than in blue. In total color-blindness the pupils were smaller in green light than in red, smaller in yellow light than in red, and smaller in blue light than in yellow—all of these reactions the opposite to those met with in the normal. In pseudo-monochromasia, false total color-blindness, and in hysterical total color-blindness the reactions of the pupils were the same as in the normal.

VIII.—Parallactic and Perspective Displacement in the Recognition of Differences of Level, or in Monocular Projection.

By Dr. **M. REIMAR**, Brunswick.

This article deals with the explanation of the manner in which differences in the level of objects seen in the fundus of the eye when viewed with the ophthalmoscope are recognized by their parallactic and perspective displacement. It relies extensively on the diagrams which accompany the text, and, like most articles of its class, cannot be well presented in an abstract.

IX.—Subjective Astigmometry by Certain Ophthalmometric Methods of Duplication, Particularly by Kagenaar's Biprism.

By Dr. **S. HOLTH**, Christiania.

This article is on the relative merits of the Wollaston prism, used in the Javal-Schiotz ophthalmometer, and the biprism used by Kagenaar in the construction of his instrument.

X.—Two Cases of Injury to the Optic Nerve.

By Dr. **CASPAR**, Mühlheim.

1. A man twenty-three years old was struck on the left eye by a piece of iron about as long and thick as a finger. The vision was completely lost for a short time but was partially regained. Five days after the injury there was an uninflamed wound of the conjunctiva, 2 or 3*mm* above the limbus of the cornea, which

seemed soiled by many black particles. Beneath the conjunctiva in its neighborhood were many black granules. The pupil was rather irregularly dilated and reacted slowly. Otherwise the external appearance of the eye was normal. Its movements were unrestricted. The lens appeared normal. In the posterior part of the vitreous were some little black floating opacities. The papilla was somewhat reddened and, together with its immediate neighborhood, slightly hazy. About its margin there was a circle of blood clots, most numerous and largest below, while above and to the right there were several groups of hemorrhages, most of which lay on the retina and extended into the vitreous. A very large hemorrhage lay above at some distance from the papilla. The veins were somewhat dilated, the arteries normal. In and about the macula the retina presented a whitish gray opacity, the typical appearance of commotio, horizontally oval, about six times the size of the papilla, sharply defined only toward the optic nerve, which it approached to within 1 p.d. The upper half of the field was completely defective, including the point of fixation, with a sharp, almost horizontal margin. Elsewhere the vision was $\frac{1}{10}$. The hemorrhages became gradually absorbed, and about three weeks after the injury signs of a partial atrophy appeared in the upper part of the papilla (inverted image). No change took place in the field, and the margin of the defect was very sharply defined. The excentric vision became $\frac{1}{5}$. Nine months later the atrophic portion of the nerve was white, with gray spots and deeply cupped. The probable diagnosis was a laceration of the lower part of the optic nerve at a short distance from its entrance into the eyeball, not involving the central vessels.

2. A man thirty-six years of age was shot in the left eye. Twenty-four hours later there was considerable suggillation of the lids, a punctured wound in the upper lid 5*mm* above the outer canthus, and much blood beneath the ocular conjunctiva on the temporal side. The pupil was moderately dilated and fixed. The movements of the eye inward were abolished, outward and upward much restricted, downward good. Ophthalmoscopic examination negative. The vision was reduced to the perception of movements of the hand a few feet away in the upper portion of the field alone. The tension was normal, there was no protrusion, and sensitiveness about the eye was the same as about the other. The next day the patient could count fingers, and a

large sector-shaped defect in the lower portion of the field could be made out with fair accuracy to involve perhaps a third of the normal field, including the point of fixation. The motility of the eye was about the same. The pupil was small and did not react. Ophthalmoscopic examination negative.

From these data the writer concludes that the shot passed close above the external rectus in a direction backward and inward and either ricochetted across the apex of the orbit or took a course more in the sagittal plane of the skull. In either case it went between the superior rectus and the optic nerve, wounding the latter, and imbedded itself near the origin of the internal rectus, probably wounding the branch of the oculomotorius which supplies this muscle. He thinks the rigidity of the pupil may have been caused by an injury of the motor root of the ciliary ganglion, though such an injury is not indicated by the good motility of the eye downward.

The patient finally recovered, with normal motility, vision $\frac{6}{6}$ with—4 D., and no diplopia. The optic nerve looked atrophic, with sharp margins and not cupped. The retinal vessels were normal. The field of vision was slightly contracted and there was a small scotoma for green and red just below the fixation point.

XI. — Isolated Spots of Opaque Nerve Fibres in the Retina.

By Dr. **CASPAR**, Mühlheim.

1. Female, seventy-two years old. A small triangular spot $\frac{1}{3}$ p.d. to the temporal side of the optic nerve (inverted image), with its apex directed toward the nerve. The apex was snow-white, the rest yellowish and finely striated, the striations tending toward the apex. Its margins were distinct centrally, but not distally. Papilla normal. Vision $\frac{6}{6}$.

2. Male, twenty-seven years old. In the upper-outer part of the left retina (inverted image) was a spot 3 p.d. long, 1 p.d. broad, snow-white with yellowish margins, in which the course of the fibres corresponded with the course of the retinal fibres. It began 1 p.d. from the papilla, which was normal in appearance, and extended along the course of the inferior nasal artery and vein, covering them in places.

3. Male, eighteen years old. About 5 or 6 p.d. inward

and a little upward from the right optic nerve (inverted image was a bright rhomboidal spot, its long diameter directed toward the papilla. Its middle was whitish, its margins, especially at the) distal end, reddish yellow, its fibres parallel to its long diameter. Small blood-vessels dipped into it here and there. Papilla normal. Vision 1.

4. Male, thirty-five years old. Two small spots of opaque nerve fibres 3 p. d. to the temporal side of the optic nerve (inverted image). The area of each respectively was about $\frac{1}{4}$ and $\frac{1}{8}$ that of the papilla. Color yellowish and reddish. They were finely striated longitudinally and their margins were not very distinct. Blood-vessels passed over them. The papilla appeared to be normal. Vision 1.

XII.—Bacteriology of Follicular Diseases of the Conjunctiva.

By Dr. **D. GROMAKOWSKI**, Kiew.

Gromakowski divides his cases into four groups: the first contains those in which follicles with chronic hyperæmia of the conjunctiva were present only in the retrotarsal folds; the second those in which follicles were also present in the tarsal conjunctiva and the disease presented a very chronic character; the third those in which the formation of follicles was acute; the fourth those of trachoma with more or less thickening of the conjunctiva, many follicles, and a muco-purulent secretion.

In the first class he found no specific micro-organism, those which were present he considered purely accidental.

In the second class, no micro-organism could be found in the contents of the follicles or in the tissue of the conjunctiva. When secretion was present, white staphylococci and pseudo-diphtheritic bacilli could be found in it.

In the cases of acute follicular conjunctivitis, small bacilli, similar to the Koch-Weeks, were found in 8, pseudo-diphtheritic bacilli in 2, micrococci tetragenes, micrococci flavi liquefaciens, and pseudo-diptheritic bacilli in 1.

In 42 cases of the fourth class, small bacilli, similar to the Koch-Weeks, were present in 15, white staphylococci and pseudo-diphtheritic bacilli in 17, streptococci in 2, pneumococci in 1, micrococci tetragenes in 1, and no bacteria, aside from the pseudo-diphtheritic bacilli, in 5.

XIII.—Two Remarkable Cases of Fragments of Iron in the Anterior Part of the Eye.

By Dr. **E. GLAUNING.**

In the first case, a man was sawing wood and was struck, as he thought, by a splinter of wood in the eye. The produced irritation subsided, but eighteen months later a severe inflammation began, which resulted in the discovery of a foreign body in the anterior chamber, which after removal proved to be a piece of iron. The patient recovered.

In the second case, a boy was struck in the eye with, as he said, a pencil. The eye became severely inflamed, and three weeks later a wound was found above the cornea and a track leading toward the anterior chamber. This was laid open until a foreign body was met with and removed. It proved to be the point of a steel pen.

XIV.—The Nuclear Zone of the Lens in Birds.

By Dr. **C. RITTER,** Bremervoerde.

An excellent contribution to the study of comparative anatomy.

XV.—A Case of Prolapse of the Retina through a Central Fistula of the Cornea, with Phthisis Bulbi of Traumatic Origin; Enucleation; Anatomical and Microscopic Examination.

By Dr. **ADAM BEDNARSKI.**

A man thirty-three years old had his left eye injured a year before by being struck with a stone. The left eyeball was small. There was considerable conjunctival and ciliary injection. The cornea was flattened and slightly cloudy. In its centre was a fistula from which protruded a gray, fibrous mass. Close behind the cornea was a muddy, reddish-gray reflex. No anterior chamber, pupil, or iris could be seen. Tension — 2. Vision 0.

After the eye had been enucleated, a section in the vertical meridian through the middle of the fistula and the papilla showed the following picture: In the centre of the cornea there was a fistula, 1. 5 *mm* in diameter, which ran rather obliquely upward. and backward. The anterior chamber was absent. The iris lay in close apposition to the cornea. Behind the iris and be-

low the fistula lay the remains of the lens. The anterior part of the lower portion of the globe was occupied by a blood clot which lay between the choroid and the detached retina. A portion of the retina protruded through the fistula, and the continuity of the prolapsed portion could be plainly seen and traced to the entrance of the optic nerve. Both retina and choroid were detached from the sclera in the upper part of the globe. No foreign body was found.

The microscopical examination confirmed the diagnosis of prolapse of the retina through a central fistula of the cornea.

XVI.—Remarks on the Position of Prof. Hess Regarding Congenital Cysts of the Eye and their Origin.

By Dr. **GINSBERG**, Berlin.

This is a purely controversial article.

XVII.—Excision of the Retrotarsal Fold in Trachoma.

By Dr. **MARCZELL FALTA**, Szeged.

Falta states that 20 % of his ophthalmic patients in Hungary have trachoma, and that he successfully treats most of the non-acute cases by rubbing with sublimate. But some cases will not respond to such treatment, and in such he performs Kuhnt's operation of excision of the retrotarsal fold. He ascribes the usefulness of the operation not to the formation of a dam by the cicatrix to the extension of the disease to the ocular conjunctiva and the cornea, but to the modification of the circulatory conditions effected, and believes that it exerts not a passive but an active influence on the course of the disease. The upper fold alone should be excised. The only modification which he makes to Kuhnt's precedure is in the management of the sutures, which has presented some difficulties. Some surgeons have left the wound unsutured, but this he does not consider wise. If the sutures are cut short they are hard to remove without injury to the wound, while if left long they have been found apt to rub against the cornea and cause ulceration. The method he employs is to cut one end of each suture close to the knot and to carry the other end out through the inner or the outer canthus and secure it to the skin with plaster. In this position the long threads cannot rub the cornea, while the opportunity is afforded

to remove them at the proper time without danger of reopening the wound by eversion of the lid.

XVIII.—Some Modifications of my Apparatus for the Diagnosis of Color-blindness.

By Dr. **WILIBALD A. NAGEL.**

Uniformity of the color-fields has been attained by the addition of two finely ground glasses, one placed just behind the shutter, the other just in front of the removable strips of colored glass. The large tin funnel of the original apparatus has been replaced by a short cylinder to which is appended a circular movable disc. The base of the apparatus has been made lighter, thus making the instrument more manageable. One yellow, one green, and two red glasses have been added. The instrument is used in the same way as the original.

REPORT OF THE PROCEEDINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

By Mr. C. DEVEREUX MARSHALL.

THURSDAY, JANUARY 25, 1906. PRIESTLEY SMITH, F.R.C.S., PRESIDENT, IN THE CHAIR.

Mr. Simeon Snell (Sheffield) related a case of **septic thrombosis of the cavernous sinus.** On May 1, 1895, a medical man pricked a small vesicle on the upper lip with a gold scarf pin which had been used previously to open an abscess, and which was thought to be clean. The next day there were redness and swelling, and later on that day he was obliged to go to bed. On the 5th the condition of the lip was worse and the blush extended to the left cheek and orbit. This was followed by proptosis and swelling of the conjunctiva and eyelids. Later the right side followed the same course, the proptosis being even more marked on this side. The movements of the eyeballs were interfered with and there were paralysis of the right facial nerve and deafness on the right side, also dulness and evident effusion of the right side of the chest. The patient died fourteen days after the commencement of the illness, his mind having been unaffected throughout.

Mr. Snell remarked that the initial lesion was that on the lip, which the medical attendants had considered to be malignant facial carbuncle. No post-mortem was allowed.

Mr. Snell also related the case of a pork butcher aged forty-eight who came to him with **acute œdema of the eyelids** on both sides. The day before, he had been dressing a pig, when the gut, which contained a large number of worms, burst and the contents splashed into his face. The œdema was present three or four hours later.

When first seen by Mr. Snell, twenty-two hours later, the eyelids on both sides were intensely œdematous, projecting as large semi-translucent swellings, leaving only a chink between them. There was considerable chemosis of the conjunctiva. The next day the swelling had much subsided, and the day after the condition of the eyelids had almost passed away, though the conjunctiva remained red.

The worms in the pig were the same class as *Ascaris lumbricoides*, and in seeking an explanation for the condition, Mr. Snell mentioned that it had been recorded that these worms, when alive, give off an irritating vapor. From another pig in which worms had collected together, the contents of the gut, and also nutrient broth, into which some of the worms had been placed, after having been cut to pieces, created no irritation when instilled into the conjunctiva of a guinea-pig.

The treatment of detachment of the retina by Mr. A. MAITLAND RAMSAY.

This paper was based on a record of fifty consecutive cases of detachment of the retina, treated in the Glasgow Ophthalmic Institution, during the four years ending October 31, 1905. The active treatment consisted in subconjunctival injections of 5 to 20 minims of 1 in 2000 bicyanide of mercury with 8 per cent. chloride-of-sodium solution, the severe pain that always followed being mitigated by the addition of a few drops of 1 per cent. acoine solution. The injection was repeated as often as might be necessary, at intervals of from four to six days; and if no decided improvement showed itself within a fortnight, free diaphoresis was induced by the subcutaneous injection of from $\frac{1}{8}$ to $\frac{1}{4}$ of a grain of pilocarpine, this alternating with the subconjunctival injections. If the site and character of the detachment were deemed favorable, the subretinal fluid was always evacuated by scleral puncture. The patient was kept prone in bed with his eyes bandaged, and every effort was made to improve his general well-being, by careful attention to diet and to the action of the bowels, kidneys, and skin. Marked chemosis of the conjunctiva was essential, and when the reaction to the subconjunctival injections was absent or ill-marked, 1 to 2 per cent. of dionine was added to the bicyanide and chloride-of-sodium solution. Of the fifty cases treated, ten showed a decided improvement, and thirteen a moderate improvement, though of the former group five, and of the latter group two, relapsed at

intervals varying from two weeks to four years. The more recent the detachment the more favorable the prognosis, but the pathological antecedents of the affected eye were more important than the duration of the condition. Failure was the rule in all cases marked by a seriously degenerated choroid, a pupil sluggish to mydriatics, a much diminished tension, and a red-colored separation. The method of treatment outlined was simple, applicable to all cases, and, as far as the author's experience went, never did any harm.

Dr. D. J. Wood related a case of **bitemporal hemianopsia.** The patient was a man aged thirty-three who had suffered for over a year with frontal headache, failing vision, and loss of memory. The vision of the right eye was $\frac{1}{60}$ and of the left $\frac{6}{60}$, and there was bitemporal hemianopsia with contraction of the field and loss of fixation in the right. He was mentally dull and forgetful and there was marked delay in answering questions. The pupils were sluggish and the knee-jerks were almost absent. During the fifty-two days he was in hospital he grew worse mentally, and on account of his foul language and filthy habits it was impossible to keep him in. After sixty-two days during which there was little change, he suddenly sat up and began to ask sensible questions, and when seen some months later he was mentally quite well. His right eye showed optic atrophy, was blind and divergent. The left improved to $\frac{6}{18}$, his patellar reflexes were normal, and his memory for events after his sudden recovery was good. He had no recollection of anything during the previous three and a half months. His history was given by his wife, brother-in-law, and mother who all agreed as to the details.

The case was thought to be one of cystic growth of the pituitary body which, during a fit of coughing, had ruptured through the eroded bone and had escaped into the pharynx or nasal cavities, but nothing of this sort was noticed by the friends, and the patient was more or less unconscious until the actual relief from pressure had occurred.

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY IN THE FIRST QUARTER OF THE YEAR 1905.

By Dr. G. ABELSDORFF, in Berlin; Prof. ST. BERNHEIMER, in Innsbruck; Dr. O. BRECHT, Prof. R. GREEFF, Prof. C. HORSTMANN, and Dr. R. SCHWEIGGER, in Berlin; with the Assistance of Prof. A. ALLING, New Haven; Prof. E. BERGER, Paris; Prof. CIRINCIONE, Genoa; Dr. DALÉN, Stockholm; Prof. HIRSCHMANN, Charcow; Dr. J. JITTA, Amsterdam; Mr. C. DEVEREUX MARSHALL, London; Dr. H. MEYER, Brandenburg; Dr. P. VON MITTELSTÄDT, Metz; Dr. H. SCHULZ, Berlin; Prof. DA GAMA PINTO, Lisbon; and Others.

Translated by DR. MATTHIAS LANCKTON FOSTER.

Sections I.–III. Reviewed by PROF. C. HORSTMANN, Berlin.

I.—GENERAL OPHTHALMOLOGICAL LITERATURE.

1. FUCHS, ERNST. *Text-book of Ophthalmology.* 10th enlarged edition. Leipsic and Vienna. Franz Deuticke, 1905.

2. SCHMIDT-RIMPLER, H. *Diseases of the Eye Associated with Other Diseases.* 2d improved edition. Vienna, 1905. A. Hölder.

3. SALZER, FRITZ. **The ophthalmology of the general practitioner.** *Münchener med. Wochenschrift*, 1905, No. 16.

4. GREEFF, R. *Text-book of Special Pathological Anatomy*, by J. Orth. Part ii. Berlin, 1905. A. Hirschwald.

5. NAGEL, W. *Handbook of Human Physiology.* Vol. iii., *Physiology of the Senses*, 2d part. Brunswick, F. Vieweg and Son, 1905.

6. SNELLEN, H., LANDOLT, E., and AXENFELD, TH. **Operations.** *Graefe-Saemisch, Handbuch der Augenheilkunde*, 2d revised edition, 91st portion, 2d part, 4th vol., 2d chapter. Leipsic, W. Engelmann, 1905.

7. HESS, C. **Pathology and therapy of lens system.** *Graefe-Sæmisch, Handbuch der Augenheilkunde*, 2d revised edition, 92d to 96th portions, 2d part, 6th vol., 9th chapter. Leipsic, W. Engelmann, 1905.

8. SCHWARZ, O. *Encyclopædia of Ophthalmology*, part 12. Leipsic, F. C. W. Vogel, 1905.

9. WIDMARK, J. *Communications from the Charles Medico-Chirurgical Institute at Stockholm.* 7th number. G. Fischer, Jena, 1905.

10. *Contributions to Ophthalmology.* Festschrift in honor of Julius Hirsch-

berg, from his students and friends on the anniversary of his 25th year as Professor in the University of Berlin. Leipsic, 1905, Veit & Co.

11. SALZER, FRITZ. *Guide to Ophthalmoscopy.* Munich, 1905. J. F. Lehmann.

12. WOLFF, HUGO. *The Theory of Skiascopy from the Standpoint of Geometrical Optics, Ophthalmoscopy, and Entoptic Perception (Entopic Theory of Skiascopy).* Berlin, 1905. S. Karger.

13. DAHLFELD, C. *Pictures for Stereoscopic Use in Strabismus.* 5th edition. F. Enke, Stuttgart, 1905.

14. HAITZ, ERNST. *Tables for the Investigation of the Centre of the Visual Field by Means of the Stereoscope.* Wiesbaden, J. F. Bergmann, 1905.

15. TEICH, M. **First aid in injuries of the eyes.** *Medicinische Klinik*, 1905, No. 26.

16. TEICH, M. **Military oculists.** *Wiener. med. Presse*, 1905, No. 19.

17. MORITZ, M. **Daylight in the schoolroom.** *Klinisches Jahrbuch*, vol. 14. Jena, G. Fischer, 1905.

18. RADZIEJEWSKI, M. **Efficiency of school physicians and investigations of the eyes.** *Zeitschrift für ärztliche Fortbildung*, 1905, No. 5.

19. GOLDSCHMIDT. **An attempt to teach the deaf and blind.** *Deutsche med. Wochenschr.*, 1905, p. 468.

20. DESCHAMPS. **Valuation of injured eyes.** *Annal. d'Ocul.*, cxxxiii., p. 112.

21. RASDELSKY, W. P. **Color-blindness and railroad signals.** *Wjenno-Med. Journal*, 1905, Jan.

22. JACKSON, E. **The relations of ophthalmology to other departments of science.** *Annals of Ophthalmology*, Jan., 1905.

23. MOSSLJANNISKOW, A. J. **The asylums for the blind in the district of Malmysch, 1903-1904.** *Westn. Ophthalm.*, 1905, No. 1.

24. TOLMATSCHEW, D. **Report of the fifth year of ophthalmological activity in the district of Slatoust.** *Westn. Ophthalm.*, 1905, No. 2.

Rarely has a text-book met with such general approbation as this one of FUCHS (1, Text-book of ophthalmology). The best proof of its usefulness is the fact that this (the tenth) edition comes just fifteen years after its first appearance in 1889. In the present edition the most recent advances, particularly in bacteriology, receive fitting mention, and the number of illustrations and notes is correspondingly increased.

Since the first appearance of SCHMIDT-RIMPLER'S (2, Diseases of the eye associated with other diseases) work in 1895, the advance in medical science has been so great as to necessitate a revision of the book for its second edition. Its size is consequently greater, but its value has been much increased as all recent investigations have received consideration.

SALZER (3, The ophthalmology of the general practitioner) gives a brief account of the eye diseases of especial interest to the general practitioner and urges their diagnosis and treatment.

The second half of the second part of the *Pathological Anatomy of the Eye* by GREEFF (4, Text-book of special pathological anatomy) contains the chapters on the lens and the vitreous. After a description of the normal condition of the lens he deals with coloboma lentis congenitum, lenticonus, changes in position and senile changes of the lens, and changes in the lenticular capsule, in the capsular epithelium, and in the ciliary epithelium. Then follow a description of the changes in the lens substance, a review of the different forms of cataract, foreign bodies of the lens, and entozoa. The chapter concludes with the disappearance of and return of transparency to cloudy lenticular masses. In the chapter on the vitreous, after a description of its normal condition, come fissure formation in the vitreous, persistent hyaloid artery, congenital connective-tissue bands in the vitreous, fluid vitreous, and the various forms of opacities and hemorrhages into the vitreous. Greeff does not believe in Leber-Nordenson's fibrillary degeneration of the vitreous, or in Iwanoff's detachment of the vitreous. Then follow regeneration and inflammation of the vitreous, foreign bodies, dense layers of connective tissue, fat, formation of cartilage and of bone, tumors, and parasites.

The second part of the third volume of NAGEL's (5, Physiology of the senses) work contains from the pen of O. Zoth the movements of the eyes and visual perception, from that of O. Weiss the nutrition and circulation of the eye and its protective apparatus.

In the 91st installment of the Graefe-Saemisch compilation SNELLEN (6, Operations) deals with neurotomy and neurectomy of the ocular nerves, LANDOLT with surgical intervention in disturbances of the motility of the eye.

HESS (7, Pathology and therapy of lens system) has succeeded very well in the difficult task of dealing with the pathology and therapy of the lenticular system which was so very ably presented in the first edition by the late Otto Becker. His treatment of the subject is never inferior to, but sometimes better than that of his great predecessor, with the result that this work may be numbered among the best ophthalmological productions of the past year.

The 12th installment of SCHWARZ's (8, Encyclopædia of ophthalmology) *Encyclopädie der Augenheilkunde* contains articles arranged alphabetically from Limbus conjunctivæ to Nachstaar-Operation.

The 7th number of WIDMARK's (9, Communications from the

Charles Medico-Chirurgical Institute at Stockholm) communications from the eye clinic at Stockholm contains from the pen of E. Jorsmark "The muscular system of the human iris, its construction and development."

The HIRSCHBERG FESTSCHRIFT (10, Contributions to ophthalmology) contains articles by de Lapersonne of Paris, van Duyse of Ghent, Albertotti of Modena, Cirincione of Palermo, Baquis of Livorno, Birnbacher of Gratz, Schwarz of Leipsic, Peschel of Frankfort, Claude duBois-Reymond, Fehr, Kuthe, Ginsberg, Loeser, F. Mendel, Merz-Weigandt, W. Mühsam, A. Moll, Purtscher, Simon Steindorff, and Br. Wolff.

In his *Guide to the Use of the Ophthalmoscope* SALZER (11, Guide to ophthalmoscopy) concisely presents to the beginner the primary principles of the use of that instrument.

HAITZ'S (14, Tables for the investigation of the centre of the visual field by means of the stereoscope) tables are used stereoscopically to ascertain the extent of a central scotoma.

TEICH (15, First aid in injuries of the eyes) describes the first aid in injuries of the eyes, chiefly from the standpoint of the general practitioner, the cleansing and disinfection of the conjunctival sac and of the neighborhood of the eye, the instillation of eye drops, the application of ointments, and the bandage.

TEICH (16, Military oculists) urges the appointment of eye surgeons in field hospitals as well as in the reserve hospitals.

According to MORITZ (17, Daylight in the schoolroom), nothing but the presence of a portion of open sky of sufficient size can guarantee to any place the requisite amount of light for the work.

RADZIEJEWSKI (18, Efficiency of school physicians and investigations of the eyes) advocates the appointment of eye physicians to schools.

GOLDSCHMIDT (19, An attempt to teach the deaf and blind) reports a case of deafness and blindness in which teaching was carried on through the sense of touch.

RASDELSKY (21, Color-blindness and railroad signals) advocates that railroad signals should be distinguished not alone by differences in color, but also by a certain number of sources of light, *e. g.*, green should be indicated by the presence of only one light, red by the presence of two or three. In this way the danger of mistakes from a sudden appearance of color-blindness could be avoided.

HIRSCHMANN.

MOSSLJANNISKOW (23, The asylums for the blind in the district of Malmysch) reports regarding 1253 patients, of whom 249 were stationary, 514 were trachomatous, 636 were incurably blind.

HIRSCHMANN.

The entire number of patients with various general diseases treated by TOLMATSCHEW (24, Report of the fifth year of ophthalmological activity in the district of Slatoust) was 42,322, of which 3657, 9%, had diseases of the eye, and 510, 14%, had trachoma.

HIRSCHMANN.

II.—GENERAL PATHOLOGY, DIAGNOSIS, AND THERAPY.

25. STOCK, W. **A clinical contribution to the question of the secretion of the aqueous after puncture of the anterior chamber.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 86.

26. STRAUB, M. **Scrofula and dormant tuberculosis in ophthalmology.** *Arch. f. Ophth.* lx., 1, p. 145.

27. VOGT, ALFRED. **Further experimental and clinical researches regarding the injurious influence of artificial anilin colors on the eye.** *Zeitschr. f. Augenheilk.*, xiii., 2, p. 117, and 3, p. 226.

28. HAAS. **Are injuries of the eye soiled by ink particularly dangerous?** *Wochenschr. f. Ther. u. Hyg. des Auges*, 1905, No. 18.

29. HESS, C. **The part played by heredity and disposition in eye diseases.** *Med. Klin.*, 1905, No. 18.

30. KOSKE, F. **The changes produced by the injection into the anterior chamber of bacteria, yeast, mould fungi, and bacterial poisons.** *Arbeiten aus dem Kaiserlichen Gesundheitsamt*, xxii., 2, 1905.

31. ORLOW. **Ocular changes in chronic poisoning with secale cornutum and its preparations.** *Neurolog. Westnik*, xi., 3 and 4, and xii., 1.

32. ALBRAND, WALTER. **Normal pupillary phenomena, with further remarks regarding the changes in cadaveric eyes of man and the lower animals. A forensic ophthalmological study.** *Arch. f. Augenheilk.*, li., 1, pp. 267 and 313.

33. HILBERT, R., **Violet vision.** *Centralbl. f. pract. Augenheilk.*, xxix., p. 134.

34. WESSELY, K. **The effect of adrenalin on the pupil and the tension of the eye.** *Zeitschr. f. Augenheilk.*, xiii., 4.

35. VOGT, H. **The effect of alcohol on the changes of the pupillary reaction.** *Berlin. Klin. Wochensch.*, 1905, No. 12.

36. LOHNSTEIN, R. **A method of determining the refraction by means of the inverted image.** *Arch. f. Ophthal.*, lx., 1, p. 87.

37. HERTEL, E. **Demonstration of intraocular pieces of steel, by means of an improved sideroscope. The influence of metals upon the magnetic needle.** *Arch. f. Ophth.*, lx., 1, p. 127.

38. HESS, C. **Notes on the investigation of central scotoma.** *Arch. f. Augenheilk.*, li., 4, p. 388.

39. BOCK, E. **Radium and the eye.** *Allgem. Wiener med. Zeitung*, 1905, Nos. 9–12.

40. KNAPP, A. **The bacteriological diagnosis of the diphtheria bacillus, especially in conjunctivitis.** *Trans. Amer. Ophthalm. Soc.*, 1904.

41. EMMANUEL. **Prognosis and treatment of ocular tuberculosis.** *Thèse de Paris*, 1905.

42. BURNETT, SWAN, M. **The mathematic point of reversal in skiascopy.** *Jour. Amer. Med. Asso.*, Jan. 14, 1905.

43. STRUYKEN. **Acuteness of vision and of hearing.** *Ned. Tydschr. v. Geneesk.*, vol. 1, No. 3, 1905.

44. HOWE, L. **The act of winking, and its photographic measurements.** *Trans. Amer. Ophthalm. Soc.*, 1904.

45. ROGMAN. **Curability of siderosis of the eye.** *Annal. d'ocul.*, cxxxiii., p. 31.

46. SPRATT, CHARLES NELSON. **The use of paraffin spheres in Frost's operation (modified Mules's), with a report of twenty-three cases.** *Arch. f. Ophthalm.*, xxxiv., 2, p. 123.

47. MEYER, O. **Enucleation of the eyeball under combined local anæsthesia.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 214.

48. MCKEE. **Experimental researches regarding the resorbent peculiarity of dionin.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 1, 374.

49. COHN, PAUL. **Mishaps of intraocular disinfection with iodoform.** *Zeitsch. f. Augenheilk.*, xiii., 1, p. 31.

50. HOLDEN, W. A. **A case of mind-blindness unique in that the entire medial surface of the occipital lobes and both optic radiations were preserved.** *Trans. Amer. Ophthalm. Soc.*, 1904.

51. OGG, T. A. W. **A case of acute plumbic encephalopathy followed by muscular paralysis and optic neuritis.** *Clin. Journ.*, Nov. 30, 1904.

52. BUCHANAN, LESLIE. **Mycoses with special reference to mycosis of the eyeball.** *Glasgow Med. Journ.*, Dec., 1904.

STOCK (25, A clinical contribution to the question of the secretion of the aqueous after puncture of the anterior chamber) reports a case in which iridectomy had been performed on account of seclusion of the pupil. After the puncture of the anterior chamber the iris puffed forward; after the iridectomy, it returned to its normal place. The explanation of this occurrence which is given is that, after the evacuation of the aqueous, a large amount of secretion behind the iris drove the latter forward.

According to STRAUB (26, Scrofula and dormant tuberculosis in ophthalmology), the ectogenous origin of phlyctenulæ is indicated by the fact that the percentage of cases which contain pathogenic bacteria in the conjunctival sac is double that of normal eyes, or of eyes which have been irritated in other ways. The pathological microbes were found in much greater numbers in eczematous eyes than in those used for control. The super-

ficial position of the efflorescences also favors their ectogenous origin. The scrofulous forms are to be differentiated by their stubbornness and tendency to recurrence. Clinical observation of the worst cases shows that at least for these tuberculosis may be looked upon as the predisposing cause.

The great number of injuries to the eye by anilin colors, observed in the clinic at Basle, induced VOGT (27, Further experimental and clinical researches regarding the injurious influence of artificial anilin colors on the eye) to institute experiments on rabbits' eyes. These showed that the acid, neutral, and macerated coloring matter as well as their aqueous solutions produced little or no irritation when introduced into the conjunctival sac, while on the contrary the basic coloring matter produced inflammation which often resulted in panophthalmitis. This difference was probably due to the fact that basic coloring material penetrated the cells more easily, and has a marked affinity for the nuclei. The therapeutic indication is tannin which forms an insoluble combination with the basic coloring matter. The conjunctival sac should be thoroughly washed out with a 5- or 10-per-cent. solution of tannin. Irrigations with water or other solutions were unable to check the poisonous action, while all attempts with tannin succeeded. It is recommended that such a solution of tannin should be always kept in readiness in anilin factories, that the proper treatment may be possible at the right time.

HAAS (28, Are injuries of the eye soiled by ink particularly dangerous?) reports two cases of injury of the eye with ink, both of which were without reaction. These show the innocuousness of ink in the wounds of the eye.

HESS (29, The part played by heredity and disposition in eye diseases) mentions as hereditary anomalies of the eyes, colobomata of the iris, choroid, retina, optic nerve, and vitreous, many forms of cataract, abnormal refractive conditions, squint, and reticular opacity of the cornea.

According to the researches of KOSKE (30, The changes produced by the injection into the anterior chamber of bacteria, yeast, mould fungi, and bacterial poisons), the injection of such living bacteria as the bacillus subtilis, bacillus prodigiosus, staphylococcus pyogenes aureus, bacillus suipestifer, and the yeast fungi into the anterior chamber, even in very small quantity, produces destruction of the eye, usually from suppurative inflammation. This effect is to be ascribed to an increase of the

bacteria in the anterior chamber and the irritative action of the bacteria cells and of their products of metamorphosis. Dead bacteria and bacteria which had been treated with alcohol and ether produced only transient symptoms of irritation. Also the material produced by bacteria in fluid cultures produced symptoms of inflammation which passed away in a short time without causing injury.

ORLOW'S (31, Ocular changes in chronic poisoning with secale cornutum and its preparations) monograph contains a review of the epidemic of ergotism in which ocular changes were observed, the views of the author in regard to those changes, the experimental works regarding the same, the pharmacognosis and pharmacology of secale cornutum, the pathological anatomy of ergotism, the methods of experimental and microscopic research, the experiments of the author on animals, and an analysis of the pathological changes in the eyes of animals poisoned by secale cornutum. He comes to the following conclusions: The reduction of vision in chronic poisoning with secale cornutum depends either on formation of cataract or on functional disturbance of the visual apparatus. The disturbance of the retinal function is not due to disease of the vessel walls or to stenosis of the vessels, but to the immediate action of the poison circulating in the blood. The affection of the optic nerve has the same origin. Cataract is not the result of spasm, or of the immediate action of the poison on the lens substance, but of a disturbance of the nutrition of the lens due to a specific change in the epithelial covering of the ciliary body, and of the posterior surface of the iris. HIRSCHMANN.

According to ALBRAND (32, Normal pupillary phenomena, with further remarks regarding the changes in cadaveric eyes of men and the lower animals. A forensic ophthalmological study), three different forms of the pupil are to be distinguished after death. Just after death the pupil usually undergoes a gradually increasing contraction as the result of the development of rigor mortis in the musculature of the iris. The rigidity of the dilatator opposes this action, so that the pupil, on the whole, remains larger than during life. This form of the pupil is to be distinguished from that in which the same process of contraction takes place to an extreme degree at the same time, observed in the enucleated eyes of dead animals. The third form of cadaveric pupil is the slight contraction beginning after the first day of

death, usually to be observed with decreasing tension of the eye. To these forms of contraction stands opposed a transient post-lethal dilatation which may very easily be overlooked.

HILBERT (33, Violet vision) observed in a man fifty years old, suffering from influenza, an attack of violet vision which disappeared after 36 hours under the administration of salipyrin. He ascribes the phenomenon to a central cause.

According to the investigations of WESSELY (34, The effect of adrenalin on the pupil and the tension of the eye), if it is desired to induce mydriasis and decrease of tension by instillations of adrenalin alone, it is necessary to use more concentrated solutions than the majority of the older preparations or the 1:1000 solution now in common use. Accordingly, a dilatation of the pupil is only rarely met with, but from three to five instillations of a 1 % solution will always produce a maximum degree of mydriasis and a slight reduction of tension.

According to VOGT (35, The effect of alcohol on the changes of the pupillary reaction), in healthy men, the pupillary reaction remains intact even in the highest degree of alcohol poisoning. On the contrary, men with congenital impairment of the central nervous system show, under the influence of a very small quantity of alcohol, distinct changes in both the pupillary and other reflexes. Chronic alcoholics exhibit the same symptom. In one case there is a congenital, in the other an acquired, diminution of the power of resistance.

LOHNSTEIN'S (36, A method of determining the refraction by means of the inverted image) method of determination of the refraction is based on the fact that in movements of the convex lens, which produces the inverted image, the image moves in the same direction as the lens. The excursions are larger in weak refraction, smaller in strong.

HESS (38, Notes on the investigation of central scotoma) used in the investigation of central scotoma a series of regularly arranged white discs on a black background, which are rendered momentarily visible by means of a shutter. The observer has to state whether all the white discs uncovered were visible, or whether some were wanting.

According to A. KNAPP (40, The bacteriological diagnosis of the diphtheria bacillus, especially in conjunctivitis), the diphtheria bacillus causes a medium containing dextrin to become red

and coagulate while saccharose is unchanged. The xerosis bacillus produces fermentation with acid production in saccharose, while dextrin remains unchanged, and finally pseudo-diphtheria bacillus affects none of the sugars.

ALLING.

BURNETT (42, The mathematic point of reversal in skiascopy) points out that, in order to have a movement "against" in skiascopy, the image of the bright spot on the fundus must be formed in front of the nodal point, and in motion "with," back of the nodal point. The place of reversal therefore is at the nodal point. He finds no justification for the use of the term "retinoscopy," yet the word "skiascopy" which he himself uses is not free from objections, because one should not use the shadow but the central reflex especially with wide pupil.

ALLING.

HOWE (44, The act of winking and its photographic measurements) has been able to measure, by photography, the time required for winking. Under normal conditions, winking occupies from 0.4″ to 0.5″. It might be of advantage to study this reflex in cases of paresis of slight degree. ALLING.

In ROGMAN'S (45, Curability of siderosis of the eye) case a piece of iron had entered the eye nine years before and had produced siderosis bulbi with grayish-brown discoloration of the iris and a cataract. After iridectomy and extraction of the cataract, the vision, with correcting lens, was $\frac{1}{2}$. Examination of the cataract by Perl's method demonstrated the siderosis. Rogman refers to the cases of Leber, von Hippel, and Cramer, in which good final results were obtained in siderosis of the iris and lens, while in Hirschberg's the vision gradually sank from $\frac{5}{60}$ to fingers at five feet. In Hirschberg's case the refractive media of the eye were cloudy after the extraction of the cataract. The prognosis of siderosis of the anterior segment of the eye seems to be good, in conformity with the experiments of Leber, while that of siderosis of the posterior segment seems to be unfavorable.

BERGER.

SPRATT [46, The use of paraffin spheres in Frost's operation (modified Mules's) with a report of 23 cases] has introduced balls of paraffin into Tenon's capsule after enucleation in 13 cases, and is much pleased with his results. The freely movable artificial eye gives no impression of being sunken. Secretions cannot collect behind it. Paraffin is excellent for the purpose,

because it is unirritating, adapts itself easily to the form of the cavity, and is soon fixed by an enveloping connective-tissue capsule. ABELSDORFF.

MEYER (47, Enucleation of the eyeball under combined local anæsthesia) undertook to perform enucleation under combined surface and infiltration anæsthesia. For the incision in the conjunctiva and the division of the insertions of the muscles, he instilled cocaine into the conjunctival sac ; for the section of the optic and ciliary nerves, he used Schleich's infiltration anæsthesia. He introduced the slightly curved canula of an Anel's syringe to the posterior polar region and injected half a syringeful of Schleich's fluid, cocaine mur. 0.1, morphine 0.025, natr. chlor. 0.2, aquæ dist. 100.0. Two minutes later he divided the nerves.

In order to demonstrate the resorbent action of dionin, MCKEE (48, Experimental researches regarding the resorbent peculiarity of dionin) injected an emulsion of India ink into the anterior chambers of a dog, a cat, and a rabbit. He then instilled in each eye, daily, two drops of a 10 % solution of dionin. Chemosis resulted in the dog and the cat, but not in the rabbit. In the latter the dionin failed to produce resorption, while in the dog and the cat the resorption of the India ink was evident. It also exhibited a markedly resorptive effect on the corneal opacities. Probably the action which produces the chemosis is a prerequisite for the resorptive action of the dionin.

COHN (49, Mishaps of intraocular disinfection with iodoform) introduced rods of iodoform into four infected eyes with no practical result. One eye went on to phthisis bulbi, the other three had to be enucleated.

The patient described by OGG (51, A case of acute plumbic encephalopathy followed by muscular paralysis and optic neuritis) was a woman aged twenty-three who had worked for nine years in a lead factory, and during that time she had suffered from anæmia, amenorrhœa, and attacks of colic and constipation. Suddenly she was seized with umbilical pain, headache, vomiting, and vertigo, followed by delirium and loss of consciousness. When this latter returned, after six days, both forearms and one leg were paralyzed. Optic neuritis which led to atrophy caused blindness. MARSHALL.

BUCHANAN (52, Mycoses with special reference to mycosis of the eyeball) states that it is admitted that only a few of the

moulds affect the human body, and these include aspergillus fumigatus, a. nigricans, a. flavescens, a. glaucus, and penicillium glaucum. The first of these is the most frequently present in the eye. Buchanan has found 21 recorded cases: 14 were reported from Germany, 2 from Scotland, 2 from the United States, and one each from Russia, France, and Italy. The cornea is the most commonly affected, though the fungus has been found growing in the interior of the eye. The appearance of the disease is usually that of a hypopyon ulcer; the floor of the ulcer has a sharply defined edge, and is raised above the level of the surrounding cornea. This is gray and may remain for weeks or months. The hypopyon is almost a constant feature. There is considerable pain, but there is no tendency for either local or general extension. The most effectual treatment is to destroy the affected area. Cultures can be made on any medium at 37.5°, and preparations stain well with Ehrlich's hæmatoxylin. MARSHALL.

III.—INSTRUMENTS AND REMEDIES.

53. RAMSAY, A. MAITLAND. **An adjustable stereoscope for training the fusion sense.** *Ophthalmoscope*, Jan., 1905.

54. HAAB, Professor O. **On the correct use of the giant magnet.** *Ophthalmoscope*, Feb., 1905.

55. HIRD, BEATSON. **Ethyl chloride in eye surgery, with an account of a fatality.** *Ophthalmoscope*, March, 1905.

56. ELSCHNIG. **Hæmolytic injections in recurrent vitreous hemorrhages.** *Arch. f. Augenheilk.*, li., 4, p. 354.

57. SEEFELDER. **Jequiritol.** *Klin. f. Augenheilk.*, xliii., i., 3, p. 273.

58. v. ARLT, F. R. **Argentum citricum, itrol Credé, in diseases of the eye.** *Aerztl. Centralztg.*, 1905, No. 3.

59. MAGNONI, A. **A new glass tube for sterilizable alkaloid tablets.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 219.

60. HERTEL, E. **A simple exophthalmometer.** *Arch. f. Ophth.*, lx., 1, p. 171.

61. ROTH, A. **The astigmoscope, a completion of Placido's keratoscope.** *Ctrlbl. f. pract. Augenheilk.*, xxix., p. 13.

62. HAY, PERCIVAL J. **Studies in the light sense.** *Arch. f. Ophth.*, xxiv., 2, p. 160.

63. POLACK, A. **Périmètre-photoptomètre.** *Annal. d'ocul.*, cxxxiii., p. 45.

64. OSTWALT, F. **Hot, dry air baths in ophthalmology.** *Annal. d'ocul.*, cxxxiii., p. 197.

65. SASSEN, M. **A simple electric ophthalmoscope.** *Ned. Tydschr. v. Geneesk.*, 1, No. 3.

66. MEISLING, A. A. **An apparatus for mingling colors and the examination of the color-blind.** *Hospitalstid.*, 1905, No. 229.

The instrument described by RAMSAY (53, An adjustable stereoscope for training the fusion sense) is a modification of Worth's amblyoscope. The instrument is made to stand securely on the table, and the substitution of total reflecting prisms for mirrors prevents the confusion arising from double images. Behind each picture is a small electric lamp, which is more convenient than lamps on sliding arms. The instrument is made by Trotter, 40 Gordon Street, Glasgow. MARSHALL.

In this paper HAAB (54, On the correct use of the giant magnet) gives his views of the correct way in which to proceed in the extraction of pieces of metal from the eyeball. He describes in detail the correct construction of a magnet suitable for the purpose, and lays great stress on the necessity of the switch worked by the foot, in order to enable the operator to instantly turn on or cut off the current as may be required. He much prefers to have the magnet fixed, for it is obviously much easier to move the head and eye of the patient than it is to move a magnet weighing 200 pounds. The greatest care should be exercised to prevent the foreign body being drawn into the ciliary body. An enlarged pupil is most useful in aiding the drawing of a particle into the anterior chamber. By very carefully placing the head of the patient in a suitable position, it is often possible to get the foreign body free in the anterior chamber. When this is done it can frequently be extracted by the small magnet, or, as Haab prefers, by the large one, after an incision has been made. Iridectomy should be performed as rarely as possible, and the author has never found it necessary. If the eye be inflamed, a small rod of iodoform should be inserted in the anterior chamber. In order to avoid injury to the vitreous he prefers to withdraw the foreign body through the anterior chamber, instead of making a fresh wound in the sclera and thus doing damage. If the foreign body has not been withdrawn from the eye by the proper use of the giant magnet, it is almost useless to attempt its extraction with the small magnet, especially if its position is uncertain.

MARSHALL.

HIRD (55, Ethyl chloride in eye surgery, with an account of a fatality) has had considerable experience in the administration of this anæsthetic, and considers it safe and convenient, and, with the exception of this one case he records, he has never seen any

trouble arise from its administration. The fatal case he describes was not an eye case. It was given for the purpose of opening a suppurating mass of malignant glands in the neck of a man who was as bad a case for an anæsthetic as could be imagined. He took the anæsthetic without struggling, and after 1½ minutes he was considered ready for the operation. An incision was made over the swelling, and at once the patient stopped breathing. All means were adopted to restore him, but without result, and as the result of the evidence given at the inquest, death was considered to be due to the anæsthetic.

Römer demonstrated that blood can be caused to disappear from the vitreous of a rabbit's eye by the injection into the vitreous of a few drops of hæmolytic immune serum from guinea-pigs. ELSCHNIG (56, Hæmolytic injections in recurrent vitreous hemorrhages) accordingly injected hæmolytic immune serum from rabbits into the vitreous of the blind left eye of a man thirty-four years old in which there was a large hemorrhage. A severe plastic iritis followed and necessitated enucleation.

SEEFELDER (57, Jequiritol) has used jequiritol on twenty cases. Its use should be confined to hospital cases where possible, though exceptionally it may be used on an out-patient. He has no scruples against its simultaneous use in both eyes. The dose can be gauged. There are individual variations in the reaction. It is not absolutely without danger, as even when used carefully it may cause dacryocystitis and ulcerative keratitis. Therefore it is contraindicated in lachrymal disease and ulcerative conditions of the cornea, the more so because serum cannot repair any damage so caused. The question of the clinical application of the serum is therefore not yet finally decided. The treatment is dependent on the number of ophthalmias and of the complications. The average duration of an ophthalmia which runs a smooth course may be reckoned as eight days. The immunity will seldom shorten this time, because it is only exceptionally that it appears within the first three weeks. An intense ophthalmia promises a better result than a slighter reaction, yet good results may be obtained even with the latter. Jequiritol has an influence upon trachoma follicles; its peculiarity as a means of clearing the cornea is unquestioned, and herein lies its usefulness. Yet it is to be used only when other things have failed and special reasons urge a further attempt to clear the cornea. It does not cut short the course of an interstitial keratitis. It is absolutely indicated only

in old trachomatous pannus; in recent pannus the usual treatment should precede.

VON ARLT (58, Argentum citricum, itrol Credé, in diseases of the eye) recommends argentum citricum or itrol Credé in conjunctivitis blenorrhoica, follicularis, catarrhalis, trachomatosa, diphtheritica, and lymphatica, and in corneal ulcers. He uses the powder and dusts it in the eye one or more times a day.

The exophthalmometer of HERTEL (60, A simple exophthalmometer) is composed of two mirrors which reflect the apex of the cornea. These mirror pictures fall upon two measures. The instrument is made by Zeiss.

ROTH'S (61, The astigmoscope, a completion of Placido's keratoscope) astigmoscope is a Placido's disk made of a thin plate of steel which can be rotated about the tube as an axis. On its posterior surface a white line shows the axis of the cylinder. When corneal astigmatism is present so that the disk looks like an ellipse, it is bent until the ellipse has become a circle.

HAY (62, Studies in the light sense) has constructed an instrument for the determination of the light minimum and the light difference by means of polarized light. He found the light difference enhanced by high degrees of refractive error and by optic atrophy. Vitreous opacities and choroiditis increase both. The forms of retinitis which affect the outer layers more than the inner are also in a higher degree prejudicial to the light sense. ABELSDORFF.

The apparatus described by POLACK (63, Périmètre-photoptomètre) is used in the investigation of the visual field for light sense and color sense. A philoptometer is moved from the periphery toward the centre and the intensity of the light can be quantitatively varied by a diaphragm. The investigation is begun first in a dark room in which a phosphorescent body serves for the fixation of the visual line, the light minimum for white or any color is determined, and then the determination is made in daylight. BERGER.

OSTWALT (64, Hot, dry air baths in ophthalmology) describes an apparatus for the use of hot, dry air baths in the treatment of eye diseases. The eye can stand a higher temperature than the lids, even as high as 150° to 175° C. The duration of the use of the apparatus is thirty minutes, exceptionally twice a day. It is

indicated in trigeminal neuralgia, chronic inflammation of the lids, pannus, parenchymatous keratitis, iritis, and iridochoroiditis.

BERGER.

SASSEN (65, A simple electric ophthalmoscope) has constructed an electric ophthalmoscope. He uses for the source of light a lamp of 4 volts placed directly beneath an oblique plane mirror. In order to prevent reflexes the mirror is not perforated, an aperture being made simply in the foil. With this instrument the fundus can easily be examined even without a dark room.

JITTA.

MEISLING (66, An apparatus for mingling colors and the examination of the color-blind) has constructed a simple apparatus for the mingling of colors in which the rays from two sources of light mingle upon a screen. By moving the screen, the part taken by the rays from either source of light can be regulated and thus many shades of color produced. The apparatus can be used for the demonstration of color-blindness by means of lanterns and for investigation with complementary and non-complementary colors.

HELGREN.

Sections IV.–VII. Reviewed by DR. ABELSDORFF, Berlin.

IV.—ANATOMY.

67. WERNCKE, THEODOR. **A contribution to the anatomy of the lachrymal sac with special reference to the question of the lachrymal glands.** *Kl. Monatsbl. f. Augenheilk.*, xliii., 1, p. 191.

68. JACOBY, E. **The neuroglia of the optic nerve.** *Kl. Monatsbl. f. Augenheilk.*, xliii., 1, p. 129.

69. MÜNCH, K. **Anatomy of the dilatator pupillæ.** *Zeitschr. f. Augenh.*, xiii., 1, p. 1.

70. MATYS. **A malformation of the eye due to an amniotic band in a human embryo of the fourth month.** *Zeitsch. f. Augenh.*, xiii., 2, p. 150.

71. ENSLIN. **The histology of the caruncula lachrymalis in man.** *Arch. f. Augenheilk.*, li., 3, p. 253.

72. COATS, GEORGE. **The structure of the membrane of Bruch and its relation to the formation of colloid excrescences.** *Royal London Hospital Reports*, xvi., 2, p. 164.

73. ANTONELLI. **Exceptional arrangement of myelin fibres.** *Soc. d'ophtalmologie de Paris*, Feb. 7, 1905.

74. ROCHON-DUVIGNEAUD. **The human macula.** *Soc. d'opht. de Paris*, Feb. 7, 1905.

75. KONDRATIEW. **The lachrymal organs of rabbits.** *Westn. Ophthal.*, 1905, 1.

Werncke (67, A contribution to the anatomy of the lachrymal sac, with special reference to the question of the lachrymal glands) found in normal lachrymal sacs groups of tubular glands with sharply defined margins, evidently a distinct organ. In diseased sacs, in which pseudo-glands are frequently found, none were demonstrable. In addition to these larger glands there were present small groups of, and single, tubular glands which were not of pathological origin.

Jacoby's (68, The neuroglia of the optic nerve) researches were made with the help of Weigert's glia stain and showed the rich endowment of the papilla with glia tissue.

Münch (69, Anatomy of the dilatator pupillæ) claims for the network of stroma cells in the iris the character of the dilatator pupillæ. The fibres of this network are nearly all radiating, and purely circular fibres are very rare. In the posterior layers of the iris, the processes of the iris cells are directly joined to the anterior layer of pigment epithelium, the so-called musculus dilatator. Without combating the participation of the latter in the dilatation of the pupil, Münch ascribes to the network of the stroma cells, which he conceives to be an active muscular network, the rôle of the true dilatator.

Enslin (71, The histology of the caruncula lachrymalis in man) has examined numerous caruncles anatomically. In the caruncle are to be distinguished the epithelium, the tunica propria, and the submucous tissue, the hairs, the sebaceous glands, and the accessory lachrymal glands. In the layers of pavement epithelium goblet cells are present both as solitary cells and grouped into primitive mucous glands which take the form of an alveolus containing a tube.

Coats (72, The structure of the membrane of Bruch and its relation to the formation of colloid excrescences) shows that by means of Weigert's stain for elastic fibres the division of the membrane of Bruch into two parts is clearly brought out, the outer a layer of very fine elastic fibres, the inner a homogeneous layer. The colloid bodies (Drusen) spring from the homogeneous layer which is a cuticular product of the pigment epithelium, while the elastic layer is of mesoblastic origin. The elastic layer passes the excrescences unchanged, which are, like the homogeneous layer, a product of the pigment epithelial cells. Although the entire membrane appears unchanged with the usual eosin stain, Weigert's stain shows that the colloid bodies, which do not take the

stain, are exclusively excrescences from the inner homogeneous layer.

ROCHON-DUVIGNEAUD (74, The human macula) had the opportunity to examine the macula lutea in a state of good preservation in two cases. He states that the fovea does not form as deep a depression as was formerly taught. In the most central part of the fovea he found uncommonly fine rods.

V.—PHYSIOLOGY.

76. WLOTZKA, E. **The synergy of accommodation and pupillary reaction.** *Pfluger's Arch.*, 107, 3 and 4, p. 175.

77. HESS, C. **The process of stimulation in the eye.** *Ibid.*, 107, p. 290.

78. FEILCHENFELD, H., and LOESER, L. **The influence exerted upon one light sensation by another simultaneous light sensation.** *Arch. f. Ophthalm.*, lx., 1, p. 97.

79. GUILLERY. **Further researches on the physiology of the sense of form.** *Arch. f. Augenheilk.*, li., 3, p. 209.

80. ABELSDORFF, C., and PIPER, H. **Comparative measurements of the size of the directly and consensually reacting pupil.** *Ibid.*, li., 4, p. 366.

81. HESS, C. **Lenticular images formed by reflection from the nucleus of the normal lens.** *Ibid.*, li., 3, p. 375.

82. VON BECHTEREW. **The cortical field of vision and its relations to the ocular muscles.** *Arch. f. Anat. u. Physiol.*, Physiol. Abtheil., 1 and 2, p. 53, 1905.

83. GRYNS, G., and NOYONS, A. K. **The absolute sensitiveness of the eye to light.** *Ibid.*, p. 25.

84. KLEIN, FR. **A contribution to the physiology of the organs of sense, particularly the eye.** *Ibid.*, p. 25.

85. BACH, L. **Pupillary reflex centres and tracts.** *Zeitschr. f. Augenheilk.*, xiii., 3, p. 260.

86. BACH, L., and MEYER, H. **The relation of the trigeminus to the pupil and to the ciliary ganglion.** *Ibid.*, xiii., 3.

87. HEINE. **Stereoscopic vision in the mirror stereoscope.** *Monatsbl. f. Augenh.*, xliii., 1, p. 40. (A compilation of the principles which govern the production of plastic pictures in the use of the stereoscope.)

88. DEPÈNE, R. **The dependence of depth perception on the inclination of the head.** *Ibid.*, xliii., 1, p. 48.

89. BUSCK, GUNNI. **Colored light filter.** *Zeitschr. f. Psychol. u. Physiol. d. Sinnesorg.*, xxxvii., 1 and 2, p. 154.

90. REIMANN, E. **The apparent increase in the size of the sun and moon at the horizon.** An addition to an article under the same title in vol. xxx. of this *Zeitschrift. Ibid.*, xxxvii., 3 and 4, p. 250. (The addition contains an account of the problem together with the most recent observations and theories.)

91. ANGIER, ROSSWELL P. **Comparative measurement of the compensatory rolling of the two eyes.** *Ibid.*, xxxvii., 3 and 4, p. 235.

92. ANGIER, ROSSWELL P. **Comparative determination of the peripheric value of trichromatic and deuteranopic eyes.** *Ibid.*, xxxvii., 6, p. 401.

93. WILLIAMS, C. H. **The cortical fusion of some color sensations.** *Trans. Amer. Ophthal. Soc.*, 1904.

94. COLLINS, TREACHER. **On the development of the accommodative power of the human lens.** *Royal London Ophth. Hospital Reports*, xvi., 2, p. 123.

95. BERTIN-SANS and GAGNIÈRE. **On the mechanism of accommodation.** *Comptes rendus de l'acad. des sciences*, cxl., p. 387.

96. CONSTANTIN. **The re-formation of the retinal image in vertebrates.** *Recueil d'opht.*, xxvii., p. 135.

97. CANTONNET. **Contributions to the study of the osmotic changes between the intraocular humors and the blood plasma.** *Thesis*, Paris, 1905.

98. DANILEWSKY. **Subjective visual sensations in the alternating magnet field.** *Wratsch*, No. 13, 1904.

WLOTZKA (76, The synergy of accommodation and pupillary reaction) has investigated whether the contraction of the pupil is associated with the convergence or accommodation. The visual lines converged on a disk several metres away. Between this and the eyes were placed two half images so that the visual lines passed through their centres, which were united into one point by binocular fusion. By looking in turn at the distant disk and the near point the accommodation was made to vary 10 dioptres while the convergence remained the same, and the pupil was found not to change. Hence accommodation and the reaction of the pupil are independent of each other.

FEILCHENFELD'S and LOESER'S (78, The influence exerted upon one light sensation by another simultaneous light sensation) article deals with (I) the influence exerted upon the light sensation in one eye by a simultaneous light sensation in the other, affecting (*a*) corresponding parts of the retina, (*b*) other parts; (II) the influence exerted upon the light sensation in one eye by a simultaneous stimulation of another part of the retina of the same eye.

In I *a* adaptation to light and dark must be taken into account. In adaptation to light, the light stimulations affecting corresponding places in the two retinæ reciprocally inhibit each other, and also equally if the stimulations are of equal strength. When they are unequal, the stronger inhibits the weaker. In adaptation to the dark, the contrary effect obtains.

(1 *b*). The action of the stimulation of dissimilar parts of the retina is the same in adaptation to both light and dark. It is the more inhibitive the greater its strength and the nearer it approaches the corresponding place.

The inhibition in 1 *a* is physiological, in 1 *b* psychological.

In II the disturbance of vision on stimulation of different places in the same eye is greater than on stimulation of dissimilar places in the two eyes, does not disappear on prolonged observation as in the latter case, and is to be ascribed for the most part to physical causes.

GUILLERY (79, Further researches on the physiology of the sense of form) shows that the sense of form is doubtless dependent on the size of the retinal image, but cannot be measured simply by the visual angle, because, for example, the perception of the interspace between two vertical lines is also dependent on the length of the latter. If, therefore, vision is defined as the ability to recognize separated points and lines, Snellen's system is insufficient for the measurement of the vision.

ABELSDORFF and PIPER (80, Comparative measurements of the size of the directly and consensually reacting pupil) have decided the question whether the illuminated pupil contracts more than the one reacting consensually, by photographing with a flash light the pupils of both eyes, one shaded and the other exposed to light. The diameter of the pupils could be measured on the developed and enlarged negatives to within 0.05*mm*. It was proved conclusively that pupils of equal size became unequal when one alone is illuminated and that the illuminated pupil becomes the smaller. This result shows that it is necessary to always exclude an unequal illumination in making a diagnosis of a pathological difference between the pupils. It also shows that the almost universally accepted design of the pupillary reflex tract can no longer rest on the equality of the direct and consensual light reaction as one of the evidences of its correctness.

HESS (81, Lenticular images formed by reflection from the nucleus of the normal lens) finds that accurate investigation reveals four lenticular images in the human eye after the middle of the twentieth year, two from the anterior and posterior surfaces of the lens itself, and two from the anterior and posterior surfaces of the nucleus. The transition from the refractive index of the cortex to that of the nucleus is not as gradual as has been thought, but more sudden, as shown by the production of these

images, and the course of the rays in the eye is more complex than in the theories heretofore accepted. There are five, instead of three, separate surfaces to be taken into account.

Gryns and Novons (83, The absolute sensitiveness of the eye to light) have determined that there is no absolute magnitude of the energy necessary to the production of a light sensation, but that the duration of its action is of greater importance. The amount of stimulating energy necessary to the production of a light sensation decreases with the duration of the illumination.

Klein (84, A contribution to the physiology of the organs of sense, particularly the eye) demonstrates that the organ of vision can be stimulated only by changes in its external conditions, founded on the fundamental property of protoplasm: the retina cannot illuminate itself. The author seeks to explain different optic phenomena which give the impression of a self-illumination of the retina, *e. g.*, the well-known production of pressure phosphenes. According to his hypothesis the illumination from the external light of places on the retina is reflexly made intermittent. This interrupted illumination induces a constant tetanic sensation which prevents the onset of "rest blindness" (Rubeblindheit).

Bach and Meyer (86, The relation of the trigeminus to the pupil and to the ciliary ganglion) paralyzed the sympathetic cells of the ciliary ganglion and the superior cervical ganglion of rabbits by the intravenous injection of nicotine and by irritation of the lateral portion of the medulla oblongata and the trigeminus obtained contraction of the pupil on the same side. The fibres of the trigeminus which are able to produce contraction of the pupil cannot therefore pass through the ciliary glanglion; it is more likely that in rabbits they pass directly to the sphincter.

Depène (88, The dependence of depth perception on the inclination of the head) has shown by means of tests with Hering's three-rod apparatus that the power of depth perception is finest when the longitudinal axis of the object and the sagittal axis of the head are parallel. A variation of 40 of these axes from each other caused a marked interference with the perception of depth; one of 70 or 80 rendered such perception impossible. When points instead of rods were used, the recognizable stereoscopic difference always remained the same.

Busck (89, Colored light filter) furnishes tables which enable

investigators to find immediately the proportion of absorption when they are using Nagel's light filter for the re-establishment of light closely approaching monochromatic.

ANGIER'S (91, Comparative measurement of the compensatory rolling of the two eyes) observation deals with the peculiarity observed by Delage, that when the body is turned to one side the rotation of one eye is different from that of the other. Angier's statement, that the accuracy of the perception of depth is the same whether the head is inclined toward the shoulder or not, agrees with this observation only under the assumption that any single eye examined by itself exhibits a peculiar rotation. But measurements made with the aid of after-images demonstrate that the compensatory rotations of the two eyes are identical, so that the difference between the compensatory rotations of the two eyes claimed by Delage cannot be confirmed.

ANGIER'S (92, Comparative determination of the peripheric value of trichromatic and deuteranopic eyes) researches supplement the fact discovered by von Kries, that colored lights are seen in the extreme periphery of the retina, where they appear to be colorless, with a different degree of clearness by trichromates and protanopes. The author has determined the clearness of the peripheral value of spectral lights by a comparison of Prof. Nagel's deuteranopic eye with several trichromatic eyes. The pupils were dilated artificially to secure good adaptation to light. The maximum of the peripheric value of the deuteranope was found to be moved toward the red end of the spectrum, while v. Kries found a movement toward the green end for protanopes. Just as the clearness of colored lights in direct vision is different for protanopes than for trichromates, so Nagel found green much clearer in central vision than did the trichromates.

BERTIN-SANS and GAGNIÈRE (95, On the mechanism of accommodation) determined the radius of curvature of the anterior surface of the lens of the rabbit's eye under the influence of eserine and of atropine. The animals were then killed and the radius of curvature of the anterior surface of the lens again determined. The latter almost coincided with that of the atropinized eye. On account of this last fact, they question the correctness of Tscherning's theory of accommodation, which assumes that the change in the radius of curvature of the surface of the lens, which takes place during accommodation, is caused by the tension of the zonula. BERGER.

According to DANILEWSKY (98, Subjective visual sensations in the alternating magnet field), if an eye is approached to the radiator in the greatly alternating magnet field, a flickering, in the form of concentric waves of light, appears in the periphery of the field of vision. A series of experiments shows that these subjective light sensations are caused by induced action in the alternating magnet field. The induced stimulation calls forth, in his opinion, a clonic spasm of the ciliary muscle, and thereby an intermittent mechanical stimulation of the peripheral zone of the retina. HIRSCHMANN.

VI.—REFRACTION.

99. LANGE, O. **The nature of progressive myopia.** *Arch. f. Ophth.*, lx., 1, p. 118.

100. AMMON. **Spasm of the accommodation.** *Deutsch. militärärztl. Zeitschr.*, xxxiv., 1, p. 46.

101. HERBST. **Spasm of the accommodation and abnormal tension of the accommodation.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 77.

102. LAGRANGE, FELIX. **Treatment of myopia by the extraction of the transparent crystalline lens. Remote results.** *Annal. d'oculist.*, cxxxii., p. 421.

103. LONTEW, W. A. **A rare case of pathological astigmatism.** *Westn. Ophthalm.*, 1905, 2.

104. ZEEMANN, W. P. C. **The relation between the refraction and the refractive system of the eye.** *Inaug. Dissert.*, Amsterdam, 1905.

105. SCHOUTE, G. J. **A peculiarity of eyes with mixed astigmatism.** *Ned. Tydschr. v. Geneesk.*, 1905, 1, No. 3.

106. V. D. BORG. **Statistical and other contributions to the knowledge of astigmatism.** *Inaug. Dissert.*, Amsterdam, 1905.

LANGE (99, The nature of progressive myopia) found in four myopic eyes the entire sclera markedly poor in elastic fibres, while in five emmetropic eyes the elastic fibres were numerous. The same difference was present in the two eyes of one individual who had one myopic and one emmetropic eye. As the choroid of the myopic eyes possessed a weak elastic network, and as the sclera of a hydrophthalmic eye was rich in elastic fibres, Lange considers the poverty of the sclera as regards elastic fibres in the myopic eyes examined to be not secondary to tension, but a primary congenital condition which determines the nature of progressive myopia.

AMMON (100, Spasm of the accommodation) has frequently observed a clonic form of spasm of the accommodation at the beginning of target practice, especially among people who only

occasionally wear their correcting lenses. This usually requires no treatment. He has also seen a tonic spasm, most often in connection with neurasthenia and hysteria. The diagnosis is certain when, after the effect of the atropine has passed off and the pupil has returned to its normal size, the refraction remains less than before the use of atropine. Perfect vision is also not to be obtained with glasses. In tonic spasm of the accommodation, an energetic treatment with atropine is indicated. In many cases it is difficult to remove the spasm even with the aid of atropine.

HERBST (101, Spasm of the accommodation and abnormal tension of the accommodation) distinguishes between a spasm of the accommodation and a tension of the accommodation in which the over-contraction of the ciliary muscle is evident on testing the vision, but is absent ophthalmoscopically. He found eight cases of accommodative tension of 1 D. or more among eighty persons without astigmatism, and one case of spasm. The treatment in all cases was atropine for two weeks.

LONTEW (103, A rare case of pathological astigmatism) describes a transparent flattening of the cornea in the region of which the hypermetropia was 4 D., the hypermetropic astigmatism 2 D. The flattened surface was surrounded by a myopic zone. HIRSCHMANN.

ZEEMANN'S (104, The relation between the refraction and the refractive system of the eye) conclusions are: Eyes with very short axes are usually hypermetropic, those with very long axes are usually myopic, yet there are emmetropic eyes with pretty long or short axes. Such emmetropic eyes are either very large or very small in all of their measurements, or they exhibit a special relationship between the radii of the cornea and of the anterior surface of the lens which maintains the emmetropia. The dioptric apparatus of persons of different refraction shows peculiarities which indicate an inclination toward partial correction of the error. The loss occasioned by the shortening or lengthening of the eyeball is diminished by a compensatory change in the refractive system. The measurements of the various components of this system indicate that this correction is made by the lens. In high degrees of hypermetropia there is a correcting increase in the curvature of the lens. Thus a connection is formed between the degree of the error and the correction through the lens or the tone of the ciliary muscle. JITTA.

According to SCHOUTE (105, A peculiarity of eyes with mixed astigmatism), a light point usually produces a circle of diffusion on the retina of an emmetropic eye. If a stenopaic slit is placed before the eye, a line of diffusion is formed on the retina parallel with the slit. An eye with mixed astigmatism forms an exception to this rule. In such an eye there must be an emmetropic meridian between the principal hypermetropic and the principal myopic meridians. If a stenopaic slit is placed in this meridian, the eye accurately perceives alternating black and white lines only when they are perpendicular to the direction of the slit. This fact is contrary to the observations on other eyes, and in order to explain it it is necessary to follow the course of the rays of light in an eye with mixed astigmatism. Schoute concludes that in such eyes the so-called emmetropic meridian does not deserve that name. A diffusion line is formed and the diffuse light falls on the figures themselves only when the lines under observation are perpendicular to the direction of the slit, and in these cases only are they distinctly visible. JITTA.

VAN DER BORG (106, Statistical and other contributions to the knowledge of astigmatism) has compiled the statistics of the persons with astigmatism who have sought relief at the *Universitätspoliklinik* in Amsterdam between 1895 and 1904. The number of such persons was 2932, 7.2 % of all patients, with 5324 eyes. The refraction was determined both subjectively and skiascopically. They were thus divided.

Simple hypermetropic astigmatism	1709 eyes,	32 %
Compound " "	1388 "	26 %
Simple myopic "	1377 "	25 %
Compound myopic "	570 "	11 %
Mixed astigmatism	319 "	6 %

In the cases of hypermetropic astigmatism, an astigmatism of 2 D. was the most frequent. As regards the axis, the axis of the greatest curvature was vertical in 1081, horizontal in 349, and oblique in 164. The vision with astigmatism of 1 D. was rarely normal and rapidly failed with an increase of the refractive error. The vision is best when the meridian of the greatest curvature is horizontal; under this condition myopes see better than hypermetropes. Persons with astigmatism are in less danger of strabismus than either myopes or hypermetropes. Strabismus is more frequent with hypermetropic than with myopic astigmatism, and those persons in whom the maximum of refraction is hori-

zontal have the least tendency to squint. Van der Borg's observations also show that astigmatic persons prefer the apppearance of a focal line to that of a focal circle. JITTA.

VII.—MUSCLES AND NERVES.

107. PICHLER, K. **Rheumatism of the ocular muscles.** *Wien. klin. Wochenschr.*, 1905, No. 14.

108. FEILCHENFELD, H. **A case of sensory ataxia of the ocular muscles.** *Zeitschr. f. klin. Medicin*, 56, 3 and 4.

109. ELSCHNIG. **Advancement of the levator. Remarks on Hugo Wolff's operation for ptosis.** *Wien. med. Wochensch.*, Nos. 30 and 45, 1904.

110. ARONHEIM. **A case of traumatic paralysis of the right abducens.** *Monatsschr. f. Umfallheilk.*, xii., No. 1, p. 13.

111. HÄHNLE. **Intermittent convergent strabismus.** *Ophthalm. Klinik.*, Feb.

112. WORTH, CLAUDE. **Strabismus: etiology, pathology, and therapy.** Authorized German edition by Dr. E. H. Oppenheimer; Berlin, Julius Springer, 1905,

113. DUANE, A. **Congenital deficiency of abduction associated with impairment of adduction, retraction movements, contraction of the palpebral fissure, and oblique movements of the eye.** ARCH. OF OPHTH., xxxiv., 2, p. 133. (A compilation of his own cases with those already published.)

114. HUBBELL, A. A. **Blindness and oculomotor palsies from injuries not involving the optic or oculomotor nerves.** *Jour. Amer. Med. Assoc.*, Jan. 7, 1905.

115. OLIVER, C. A., and HOYT, D. M. **The direct action of drugs upon the extrinsic muscles of the eyeball. Preliminary notes upon a few of the findings obtained.** *Annals of Ophthal.*, Jan., 1905.

116. DUANE, A. **Prism exercises, their indications and technique.** *Trans. Amer. Oph. Soc.*, 1904.

117. LAMBERT, W. E. **A case of ophthalmoplegia externa bilateral.** *Trans. Amer. Oph. Soc.*, 1904.

118. LANNOIS, M., and FERRAND, C. **Motor ocular paralysis of otitic origin.** *Rev. hebd. de laryng., d'otol. et de rhinol.*, July 2, 1904.

119. ROCHE, CHARLES. **Notes on two traumatic ocular paralyses.** *Recueil d'ophtalmologie*, xxvii., page 73.

120. LANDOLT, E. **A new operation on the ocular muscles. Muscular lengthening.** *Arch. d'ophtal.*, xxv., p. 1.

121. LAZAREW, E. G. **Diagnosis of paralysis of the ocular muscles by means of double images.** *Westn. Ophth.*, 1905, 2.

122. BLAGOWESCHTSCHENSKY. **Tenotomy with stretching.** (Panas's operation.) *Westn. Ophth.*, 1905, 2.

PICHLER (107, Rheumatism of the ocular muscles) observed four cases of rheumatism of the ocular muscles among 160 cases of acute articular rheumatism. The tendons of one or more

muscles were sensitive to pressure, and there extended backward from the insertion a diffuse, reddish, flat swelling which disappeared in a few days under antirheumatic treatment and was to be differentiated from episcleritis.

FEILCHENFELD (108, A case of sensory ataxia of the ocular muscles) observed, in a man thirty-nine years old who had free motility of both eyes when the vision followed an object held before them, an inability to move the eyes either laterally or vertically without fixation of an object. Attempts to do so caused a spasm of convergence. As the centrifugal tract of the ocular movements was intact, the author placed the lesion in the sensory part of the centripetal tract (sensory ataxia). He assumes a deficiency in the kinæsthetic perception of the motor organ of the eye, which is apparent only when the movements of the eye are not guided by stimulation of the retina. At such times the eyes assume a position of convergence due to a pathological change from a previous, but healed, paresis of the externi.

ARONHEIM'S (110, A case of traumatic paralysis of the right abducens) patient was knocked down by a blow from a ladder on the right side of the head. A short time later paralysis of the right abducens and hemorrhage from the right Eustachian tube were found. The diagnosis made was of a fracture of the petrous portion of the temporal bone and laceration of the abducens before its entrance into the cavernous sinus.

HUBBELL (114, Blindness and oculomotor palsies from injuries not involving the optic or oculomotor nerves), thinking that he could exclude direct injury to nerve and muscle in cases of paralysis from traumatism, offers the suggestion that the condition may be due to reflex action. ALLING.

OLIVER and HOYT (115, The direct action of drugs upon the extrinsic muscle of the eyeball. Preliminary notes upon a few of the findings obtained) offer some generalizations regarding the effect of certain drugs (not named) upon the eye muscles of animals. The experiments were made with muscles separated from the eye and immersed in solutions as well as by injections about the muscles and sheath. There is a definite response of the muscle to the influence of the drugs and to the different strengths of the same drug. Further particulars are promised.

ALLING.

LAMBERT (117, A case of ophthalmoplegia externa bilateral)

ascribes the paralysis to a subacute polio-encephalitis superior, due to the grippe. ALLING.

LANDOLT (120, A new operation on the ocular muscles. Muscular lengthening) recommends in the place of tenotomy a lengthening of a short muscle by an oblique incision of the latter, shifting the cut surfaces and securing the latter in their new relation by sutures previously introduced. BERGER.

Sections VIII.-XII. Reviewed by DR. R. SCHWEIGGER, Berlin.

VIII.—LIDS.

123. VALUDE. **Incidents and accidents in Parinaud's operation for ptosis.** *Soc. d'ophtalm. de Paris*, Dec. 6, 1904.

124. BRAUNSTEIN, E. P. **The operative treatment of ptosis.** *Westnik Ophthalmolog.*, 1905, 1.

125. SILFVAST, J. **A case of large defect of the eyelid repaired by means of Thiersch grafts.** *Finska läkaresällsk. Handl.*, 1905, p. 1.

126. VALUDE. **Chromidrosis of the lid.** *Soc. d'ophtalm. de Paris*, Feb. 7, 1905.

127. PANSE, G. **A case of adenoma of the Meibomian glands.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 88.

128. BLOK, D. G. **Angiosarcoma of the upper lid.** *Ned. Tydschr. v. Geneesk.*, 1, No. 3, 1905.

129. TROUSSEAU, A. **An epithelioma of the lid.** *Ann. d'oculistique*, cxxxiii., p. 36.

130. TAYLOR, JAMES. **Case of congenital ptosis and meningocele.** *Report of the Society for the Study of Diseases of Children*, vol. 4.

VALUDE (123, Incidents and accidents in Parinaud's operation for ptosis) reports a case in which as a consequence of Parinaud's operation for ptosis an opacity of the upper third of the cornea with reduction of the sensibility was produced. He thinks that during the operation a nerve branch passing from the conjunctiva to the cornea was injured. BERGER.

BRAUNSTEIN (124, The operative treatment of ptosis) obtained excellent results in three cases of paralytic ptosis by means of Lapersonne's operation modified by himself with regard to the insertion of the ligatures. HIRSCHMANN.

VALUDE'S (126, Chromidrosis of the lid) case was one of chromidrosis with carcinoma of the lower lid. The discoloration was also present in the palpebral conjunctiva. In the discussion, Rochon-Duvigneaud considered that it showed some analogy to xeroderma pigmentosum, which, however, does not occur on the face. BERGER.

A man seventy-five years old had a tumor nearly as large as an egg hanging from his upper lid. It was removed with its capsule and was determined by PANSE (127, A case of adenoma of the Meibomian glands) to be a benign adenoma of the Meibomian glands.

TROUSSEAU (129, An epithelioma of the lid) reports a case of epithelioma of the lid of a woman sixty-eight years old, which he had watched for eight years. It had been "cured" four times by the application of antiseptics, methyl blue, Czerny-Truneczek's method, potassium chloride, and the X-rays. Each time there was a recurrence until finally it was permanently cured by removal. BERGER.

In the case reported by TAYLOR (130, Case of congenital ptosis and meningocele) the patient was a lad aged five and one-half years whose eyes had always been prominent. He had an oxycephalic skull, an occipital meningocele, proptosis, squint, nystagmus, and defective mental condition. His sight had recently become greatly affected by optic atrophy. MARSHALL.

IX.—LACHRYMAL APPARATUS.

131. v. BRUN. **Symmetrical swelling of the lachrymal and salivary glands in pseudo-leucæmia.** *Beitrage z. klin. Chir.*, vol. 45, No. 2.

132. CHEINISSE, L. **Mikulicz's disease.** *Semaine méd.*, 1905, No. 2.

133. STEIREN, EDW. **Cystadenoma of the lachrymal gland.** *Trans. Amer. Ophth. Soc.*, 1904.

134. MORAX, V. **Concretions of the canaliculi.** *Annales d'oculistique*, cxxxiii., p. 188.

135. LAGRANGE, F. **Actinomycosis of the lachrymal passage.** *Gaz. hebd. des sciences méd. de Bordeaux*, Nov. 6, 1904.

136. DUPUY-DUTEMPS. **Papilloma of the lachrymal sac.** *Soc. d'opht. de Paris*, Jan. 6, 1905.

137. TERSON, A. **Prelachrymal sebaceous cyst.** *Soc. d'opht. de Paris*, Jan. 6, 1905.

138. CHAPPÉ, T. **Paralachrymal tuberculous neoplasms.** *Annales d'oc.*, cxxxiii., p. 177.

VON BRUN (131, Symmetrical swelling of the lachrymal and salivary glands in pseudo-leucæmia) considers it probable that the cases of symmetrical swelling of the lachrymal and salivary glands have a common origin with the pseudo-leucæmia, perhaps an infectious agent which enters the glands by way of the blood.

CHEINISSE'S (132, Mikulicz's disease) article is a résumé of what is known about Mikulicz's disease, chronic swelling of the

lachrymal and submaxillary glands. He ascribes the trouble to an exogenous infection from the mucous membranes to the excretory ducts of the glands, and finally to the glands themselves.

BERGER.

X.—ORBIT AND NEIGHBORING CAVITIES.

139. WÜRDEMANN, H. W. **Exophthalmos and sphenoidal abscess.** *Ophth. Record*, Jan., 1905.

140. MORAX, V. **Osteo-periostitis of the orbit due to staphylococci.** *Soc. d'opht. de Paris*, Feb. 7, 1905.

141. DEBEVE. **Contribution to the study of foreign bodies in the orbit.** *Arch. d'ophtal.*, xxv., p. 157.

142. SNELLEN, H., Jr. **Specimens of tumors and abscesses of the orbit.** *Ned. Tijdschr. v. Geneesk.*, vol. 1, No. 3, 1905.

143. SPIEGLER, FR. **Bilateral exophthalmos from adenoid vegetations.** *Münch. med. Wochenschr.*, 1905, No. 20, p. 982.

144. UHTHOFF, W. **Exophthalmos of high degree from deformity of the skull.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 1.

145. BRAUNSCHWEIG. **Pulsating exophthalmos.** *Ibid.*, p. 356.

146. GALEZOWSKI, J. **Maxillary sinusitis with exophthalmos and optic neuritis.** *Soc. d'ophtalm. de Paris*, Feb. 7, 1905.

SNELLEN (142, Specimens of tumors and abscesses of the orbit) exhibited specimens of tumors and abscesses of the orbit which demonstrated the difficulty of making a differential diagnosis between them. An abscess does not always show signs of inflammation. On the other hand, he had met with a case of protrusion of the globe with signs of inflammation. Exenteration was performed because of the probability that a tumor was present. The patient died shortly afterward and the autopsy revealed a tumor of the frontal lobe. In another case he obtained pus by puncture, and yet a tumor was present. JITTA.

In UHTHOFF'S (144, Exophthalmos of high degree from deformity of the skull) case there was a high degree of oxycephaly with marked exophthalmos, neuritic atrophy of the optic nerve and total blindness, hydrocephalus externus with pachymeningitis and optic neuritis and finally hydrocephalus internus. He did not ascribe the optic neuritis to stenosis of the optic canal, but to inflammatory changes in the sheath of the optic nerve, and particularly to a supposed temporary intracranial pressure at the time of the early ossification of the sutures. The ossification of the sutures with the external hydrocephalus caused a marked contraction of the orbit.

BRAUNSCHWEIG (145, Pulsating exophthalmos) insists that auscultation should always be practised in exophthalmos because pulsation can be thus detected before it can be felt. An injury of the wall of the sinus can remain without complications and relatively harmless. An injury of the artery may possibly involve only its intima, and an aneurysm may gradually develop, the pulsation of which can be felt. Braunschweig describes very fully a pulsating exophthalmos after a shot in the temple, which he had studied by means of the X-rays and pulsation curves. Various therapeutic measures are mentioned, but sometimes none of them is satisfactory.

In GALEZOWSKI's (146, Maxillary sinusitis with exophthalmos and optic neuritis) case a carious tooth resulted in a maxillary sinusitis with phlegmon of the orbit and optic neuritis. Vision was reduced to $\frac{1}{4}$. The antrum was opened according to Luc's method, and within two weeks the vision had returned to normal.

BERGER.

XI.—CONJUNCTIVA.

147. HARMAN. **Lymph follicles in apparently healthy conjunctivæ.** *Meeting of the Ophthalm. Section of the British Med. Assn.*, 1904.

148. ELLETT, E. C. **Parinaud's conjunctivitis with report of three cases.** *Ophthalmic Record*, Jan., 1905.

149. KATZ, R. A. **Yellow ointment in acute infectious conjunctivitis.** *Westn. Ophth.*, 1905, 2.

150. GUICHARD. **Contribution to the study of the attenuated form of conjunctival diphtheria.** *Thesis*, Paris, 1905.

151. DERBY, G. S. 1. **The bacillus pneumoniæ found in a case of conjunctivitis.** 2. **The bacillus pyocyaneus found in a case of conjunctivitis.** 3. **Blank-cartridge wound of the eye. Panophthalmitis probably due to bacillus.** *Amer. Jour. of Ophthal.*, Jan., 1905.

152. PFALZ. **Treatment of blennorrhœa neonatorum. A couple of words in vindication of protargol.** *Zeitschr. f. Augenh.*, xiii., 3, p. 212.

153. URATA, T. **Experimental investigations of the value of Crede's drops.** *Zeitschr. f. Augenheilk.*, xiii., 3, p. 242; 4, p. 335.

154. RAEHLMANN, E. **Trachoma. Histological, ultramicroscopical, and physiologico-chemical studies.** *Beiträge zur Augenheilk.*, 62, 1905.

155. PETERS, A. **Further remarks on trachoma and on the treatment of chronic diseases of the conjunctiva.** *Münch. med. Wochensch.*, 1905, 1.

156. POULARD. **Contagion of trachoma.** *Soc. d'ophtalm. de Paris*, Feb. 7, 1905.

157. ASTWAZATUROW, P. **The importance of sanitary stations for the treatment of trachoma.** *Wojenno med. Journ.*, Jan., 1905.

158. GREITZ, W. M. **Ambulatory mechanical treatment of trachoma.** *Wojenno med. Journ.*, March, 1905.

159. WASSJUTINSKY, A. G. **X-ray treatment of trachoma.** *Russk. Wratsch*, 1905, No. 1.

160. MAKLAKOW, A. A. **Essential contraction of the conjunctiva (pemphigus conjunctivæ).** *Westn. Ophth.*, 1905, 1.

161. DE SCHWEINITZ, G. E., and SHUMWAY, E. A. **Conjunctivitis nodosa with histological examination.** *Trans. Amer. Ophth. Soc.*, 1904.

162. WÜRDEMANN, H. V. **Ophthalmia nodosa.** *Ophth. Record*, Feb., 1905.

163. RAY, J. M. **Injuries to the eye from particles of a copying pencil getting into the conjunctival sac. Report of two cases.** *Ophthal. Record*, Jan., 1905.

164. KAYSER, B. **Injuries to the eyes from the larvæ of flies.** *Kl. Monatsbl. f. Augenheilk.*, xliii., 1, pp. 205 and 394.

165. GRUNERT. **Operation in total symblepharon of both lids to form a cavity for an artificial eye.** *Ibid.*, p. 298.

166. GULLSTRAND, A. **Building up of the fornix with supported flaps of epidermis.** *Ibid.*, p. 312.

167. HOTZ, F. C. **The use of Thiersch's skin flaps in the operation for total symblepharon.** *Ibid.*, p. 319.

168. HERBERT, H. **Two cases of colloid (hyaline) degeneration of tarsus and conjunctiva.** *Royal London Ophth. Hospital Reports*, xvi., 2, p. 135.

169. COSMETTATOS, G. E. **Papilloma of the bulbar conjunctiva with involvement of the cornea.** *Annales d'oculistique*, cxxxiii., p. 39.

KATZ (149, Yellow ointment in acute infectious conjunctivitis) recommends the use of the 1 % yellow ointment in cases of acute infectious conjunctivitis with free discharge and extravasation of blood. He obtained improvement and healing, sometimes even in two or three days, both in fresh cases and in those in which nitrate of silver had been used for some time without avail.

HIRSCHMANN.

According to DERBY (151, 1. The bacillus pneumoniæ found in a case of conjunctivitis. 2. The bacillus pyocyaneus found in a case of conjunctivitis. 3. Blank-cartridge wound of the eye. Panophthalmitis probably due to bacillus), the Friedländer bacillus pneumoniæ has been found in ocular affections by a number of observers. Out of 150 cases of conjunctivitis he has discovered it in only one. The bacillus pyocyaneus is rarely found in the eye. The cause of the panophthalmitis in the third case was thought to be the common "hay bacillus" (bacillus subtilis). ALLING.

PFALZ (152, Treatment of blennorrhœa neonatorum. A couple of words in vindication of protargol) has shown by a year's use

that a 1 to 5 % solution of protargol, with cold applications and, perhaps, hourly cleansing with a solution of permanganate of potassium, both in the hands of the laity, can completely take the place of nitrate of silver in the treatment of blennorrhœa neonatorum.

URATA (153, Experimental investigations of the value of Crede's drops) demonstrated on rabbits' eyes that a ½ % solution of nitrate of silver is sufficient for the gonococci and therefore recommends a 1 % solution to be used in practice as less irritating to the eye than a 2 %.

RAEHLMANN (154, Trachoma: Histological, ultramicroscopical, and physiologico-chemical studies) brings forward new facts which he has obtained partly through his histological, but more through his ultramicroscopical, researches. He also tries to explain the action of astringents in trachoma. He recognizes follicular conjunctivitis to be a mild form of trachoma, as there is no anatomical difference in the follicles.

PETERS (155, Further remarks on trachoma and on the treatment of chronic diseases of the conjunctiva) repeats his deductions regarding trachoma. He considers the color characteristic of the follicles; that this color indicates the presence of adenoid tissue, and that the latter is the characteristic of trachoma. This, and not the follicles, possesses the tendency to scar formation. The adenoid tissue can be present without follicles, and for the purposes of a careful diagnosis a piece should be excised and examined microscopically. Such cases he believes to be an abortive form of trachoma. He advises mechanical treatment of conjunctival diseases with increased adenoid tissue, with little papillary swellings, and in conjunctivitis sicca. If Peters's views regarding the importance of adenoid proliferation in the conjunctiva are correct, no prophylaxis is possible.

GREITZ (158, Ambulatory mechanical treatment of trachoma) treated 312 trachomatous soldiers by squeezing out the trachoma granules with as little injury as possible to the sound conjunctiva. The conjunctival sac was washed out before the operation with a 2:1000 solution of mercuric cyanide, afterward with a 2:10,000 solution of either mercuric chloride or cyanide, and iodoform ointment was introduced. Later bluestone, alum, or silver nitrate was applied. The duration of treatment was, in mild cases, from three to five weeks; in the moderately severe cases,

two to three months. Eighty per cent. of these cases recovered. This treatment is not applicable to severe cases.

HIRSCHMANN.

WASSJUTINSKY (159, X-ray treatment of trachoma) used the X-rays in seven cases of trachoma. His conclusions are that trachoma is influenced by the X-rays beyond a doubt. The infiltration diminishes, the granules slowly become smaller, pannus disappears quickly and completely, and the subjective symptoms of pain are relieved. He did not obtain a perfect cure in a single case. The cicatricial formation is insignificant. The milder forms of trachoma, without deep infiltration, yield more readily to the usual methods of treatment than to the X-rays. Treatment by the X-rays is painless and followed by no bad after-results. Improvement can be obtained in severe cases which resist obstinately the usual treatment. HIRSCHMANN.

In the clinic at Moscow two cases of pemphigus conjunctivæ were observed among 38,000 patients. MAKLAKOW [160, Essential contraction of the conjunctiva (pemphigus conjunctivæ)] reviews the literature on the subject and questions the correctness of the identification of this disease with pemphigus, because the bullæ of true pemphigus leave cicatrices neither on the skin nor mucous membranes, but only pigmentation, while the contrary is true in this conjunctival disease. Moreover, sometimes no bullæ are observed in this disease. The contraction of the conjunctiva and the resultant consequences form its characteristics. In the case observed by the author there was ptosis of the right eye, narrowing of the palpebral fissure to 0.5*cm*, great diminution in the size of the upper part of the conjunctival sac, and three bands which bound the lower lid fast to the globe. There was a pterygium-like formation on the lower part of the cornea. The lacus lachrymalis and the caruncula were absent as a result of the ankyloblepharon. All these symptoms were still more marked in the left eye, and the cornea was covered with a pannus-like layer. The vision was very slight. Maklakow separated the lower lid from the left eye, formed a lower conjunctival pouch from 0.5 to 1*cm* deep, and lined it with a membrane taken from a fresh-egg shell, which was removed at the end of twelve days. A lower fornix was thus re-formed and motility restored to the eyeball. The vision improved to fingers at $\frac{1}{2}m$. The author hopes the result will be permanent. HIRSCHMANN.

The case described by DE SCHWEINITZ and SHUMWAY (161, Conjunctivitis nodosa with histological examination) had the appearance of tuberculosis of the conjunctiva. There were a number of grayish-yellow nodules in the bulbar conjunctiva associated with some conjunctivitis. The tissue was excised, and when examined with the microscope each nodule was found to contain in its centre a hair surrounded by round-cell infiltration. Bacterial infection was absent. Children are at times in the habit of playing with caterpillars, and in this case had been throwing them at one another. Undoubtedly the hairs of the *Spilosoma virginica* or "woolly bear" caterpillar were thus introduced into the conjunctiva. ALLING.

WÜRDEMANN (162, Ophthalmia nodosa) relates two cases of hypertrophy of the conjunctiva due to the presence of a bee-sting and a part of the antennæ of a grasshopper, which he called ophthalmia nodosa. ALLING.

There seems to be some peculiarly irritating quality in the ordinary copying or indelible aniline pencil. RAY (163, Injuries to the eye from particles of a copying pencil getting into the conjunctival sac; report of two cases) recites two cases in which small pieces of the point lodged in the conjunctival sac. In one the reaction was severe, terminating in corneal opacities and symblepharon. ALLING.

KAYSER (164, Injuries to the eyes from the larvæ of flies) removed from the conjunctival sac of a child some larvæ which had been deposited there by a fly. The temporal portion of the conjunctiva was reddened, swollen, studded with large and small follicles, and excreting a little thin mucus.

GRUNERT (165, Operation in total symblepharon of both lids to form a cavity for an artificial eye) uses for the formation of the conjunctival sac both pediculated and non-pediculated flaps of mucous membrane and of skin. He allows the flaps to heal to the lids, which have been turned out after the outer canthus has been divided by two divergent incisions which, at the end of three weeks, are to be reunited over a glass eye. If any islands of mucous membrane or skin remain in the conjunctival sac, they are used to cover the posterior pole. In this way he found in one case only two operations necessary.

GULLSTRAND (166, Building up of the fornix with supported flaps of epidermis) considers it important that not a thread of

cicatricial connective tissue which may bring about a subsequent contraction be left in the new fornix. He transplants a single large flap of epidermis, supports it with a guttapercha disk, and temporarily sutures the lids together.

HOTZ (167, The use of Thiersch's skin flaps in the operation for total symblepharon) always operates separately on the upper and lower fornix, takes flaps of epidermis from the arm and fixes them by means of plates of lead. They are sutured to the margin of the lower lid. In dealing with the upper lid they must be sufficiently large to fill the entire conjunctival sac. An aperture is left for the cornea. The lids remain closed four days. The plates are used for a week, but are removed for the purpose of cleansing.

HERBERT [168, Two cases of colloid (hyaline) degeneration of tarsus and conjunctiva] observed in two Hindoo women a marked thickening of the tarsus of the upper lid with a yellowish discoloration of the waxy conjunctiva. Anatomical investigation revealed colloid degeneration, combined, in one case, with calcification and ossification. ABELSDORFF.

COSMETTATOS (169, Papilloma of the bulbar conjunctiva with involvement of the cornea) reports a case of papilloma of the bulbar conjunctiva of a woman thirty-six years old, which later assumed a malignant character, involved the cornea, and rendered enucleation necessary. Only two cases have hitherto been reported of extension of a papilloma of the conjunctiva to the cornea. BERGER.

XII.—CORNEA, SCLERA, ANTERIOR CHAMBER.

170. ENGELMANN, L. **Hyaline degeneration of the cornea.** *Zeitschr. f. Heilk.*, xxvi., 1905, 4, p. 202.

171. VEASEY, C. A. **Report of two cases of family macular degeneration of the cornea.** *Trans. Amer. Ophth. Soc.*, 1904.

172. NOYON. **Primary band-shaped opacities of the cornea.** *Ned. Tijdsc. v. Geneesk.*, 1905, 1, No. 3.

173. KOLL. **A case of brown discoloration of the cornea from chromium.** *Zeitschr. f. Augenheilk.*, xiii., 3, p. 220.

174. MELLER, J. **Keratitis punctata leprosa.** *Kl. Monatsbl. f. Augenheilk.*, xliii., 1, p. 66.

175. SPICER, HOLMES. **Keratitis profunda.** *Report of the Ophthalmic Section of the British Med. Assn.*, 1904.

176. VOSSIUS, A. **Keratitis parenchymatosa annularis.** *Arch. f. Ophth.*, lx., 1, p. 116.

177. v. Reuss. A. **The treatment of keratitis.** *Allgemeine Wiener mediz. Zeitung*, 1905, 1, 3, and 4.

178. Galezowski, Jean. **Neuro-paralytic keratitis.** *Recueil d'ophtal.*, xxvii., p. 146.

179. Osterroht. **Keratomycosis aspergillina.** *Berl. klin. Wochenschr.*, 1905, No. 7, p. 173.

180. Paul, L. **Ulceration of the cornea from diplobacilli.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 154.

181. Paul, L. **Serum therapy, particularly in ulcus serpens corneæ.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 54.

182. Szczybalski. **A case of corneal ulcer from infection with the bacillus pyocyaneus.** *Arch. f. Augen.*, li., 3, p. 249.

183. Holmstrom. **Treatment of purulent keratitis.** *Hygeia*, 1905, 1, p. 273.

184. de Lapersonne. **Collargol in purulent inflammation of the cornea.** *La presse médicale*, 1905, No. 36.

185. Vaucleroy. **Unguentum Crede in ophthalmology.** *Rec. d'ophtal.*, 1905, No. 2.

186. Antonelli. **Ulcerous syphilide of the cornea.** *Soc. d'ophtal. de Paris*, Jan. 10, 1905.

187. Vinsonneau, C. **Syphilitic gumma of the cornea.** *Arch. d'ophtal.*, xxv., p. 104.

188. Feilchenfeld, H. **Prophylaxis of the recurrence of erosions of the cornea.** *Deutsche med. Wochensch.*, 1905, 8, p. 425.

189. Bedell, A. J. **Corneal laceration with cilia in the anterior chamber. Pupillary occlusion. Four operations. Recovery.** *Annals of Ophth.*, Jan., 1905.

190. Evans, Thomas. **Hydatid cyst of the anterior chamber.** *Ophthalmoscope*, Jan., 1905.

191. Lopez. **Treatment of pterygium.** *Rec. d'ophtal.*, xxvii., p. 78.

192. Lauber, H. **Peripheral ectasia of the cornea.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 382.

193. Wicherkiewicz. **Primary keratoconus.** *Zeitschr. f. Augenheilk.*, xiii., 2, p. 93; also *Arch. d'ophtalmologie*, xxv., p. 87.

194. Stock, W. **The secretion of the aqueous after puncture of the anterior chamber.** *Klin. Monatsbl. f. Augenh.*, xliii., 1, p. 86.

195. Stephenson, Sydney. **Traumatic keratitis in the new-born.** *Ophthalmoscope*, Jan., 1905.

Engelmann (170, Hyaline degeneration of the cornea) stained the products of degeneration in the cornea red with saffranin. He excluded colloid, amyloid, and glycogenous substances by the physical peculiarities, the microchemical reactions, and the staining of the products of degeneration, and proved them to be hyaline. The patients had suffered for years from a chronic superficial keratitis. Hyaline had developed in one case in the deeper tissue layers, in the other just beneath the epithelium also. In the first case, the pathological changes were compara-

tively slight. In the second case, the subepithelial tissue had numerous branching outgrowths, was quite vascular, and Bowman's membrane had completely disappeared. Giant cells took part in producing this atrophy.

VEASEY (171, Report of two cases of family macular degeneration of the cornea) had two cases characterized by progressive opacity of both corneæ beginning about the tenth or twelfth year and leading to blindness. They are similar to those already described and named by Fehr. ALLING.

Most cases of band-shaped keratitis are secondary to either cyclitis or chronic glaucoma. In NOYON'S (172, Primary band-shaped opacities of the cornea) case the cornea presented a band-shaped opacity extending from right to left, while the periphery was clear. The corneal epithelium was intact and there were no signs of inflammation. The patient had arteriosclerosis. Most authors suppose that in band-shaped keratitis there is a deposit of calcium salts between the substantia propria and Bowman's membrane. Leber ascribes its formation to evaporation of the fluid in the palpebral space when the blood-vessels are diseased and the blood contains much salt. The differentiation between primary and secondary band-shaped keratitis is purely clinical. JITTA.

KOLL'S (173, A case of brown discoloration of the cornea from chromium) patient caused the discoloration of the cornea with chromium, the conjunctiva remaining unaffected, by constantly rubbing his eyes with dirty fingers or rags. There was a little ulcer and a slight loosening of the epithelium. The discoloration did not disappear from the cornea. This condition could be produced experimentally only when the cornea was exposed to the sunlight after instillation of a 5% solution of bichromate of potassium. Koll experimented also with anilin, the warm vapor of which produced transient changes in the cornea.

A patient with lepra had a diffusely opaque cornea with little gray nodules. MELLER (174, Keratitis punctata leprosa) removed some of these nodules and found that they contained great quantities of lepra bacilli.

v. REUSS (177, The treatment of keratitis) endeavors to bring about absorption of the infiltrating cells in keratitis by dilatation of the blood and lymph channels. This is secured by reduction of the intraocular tension, partly by eserine, partly by atropine.

Secondly by the application of a bandage to prevent friction of the cornea ; when this is contra-indicated by the presence of pus or eczema, the application of an ointment suffices. Third, the intraocular tension may be reduced by means of paracentesis. He also uses heat, dionin in large doses, and subconjunctival injections of salt solution to obtain dilatation of the vessels. Fascicular keratitis alone is treated differently, by section of the vessels and cauterization of the ulcer. The pain and photophobia which usually accompany corneal disease v. Reuss treats with the faradic current. If a prolapse of the iris is large and fresh, he excises it, otherwise he leaves it alone.

In GALEZOWSKI'S (178, Neuro-paralytic keratitis) case, a neuro-paralytic keratitis with iritis and hypopyon followed the application of a hot eye-bath in a woman who had suffered for three or four years from monolateral paralysis of the trigeminus. The abrasion of the epithelium was followed by atrophic ulcer of the cornea which finally healed leaving a scar.

BERGER.

In OSTERROHT'S (179, Keratomycosis aspergillina) case the hypopyon disappeared after two days of medical treatment, but the corneal inflammation did not recover until after the fungi had been removed.

PAUL (180, Ulceration of the cornea from diplobacilli) produced extremely severe ulcers of the cornea with hypopyon, iritis, chemosis, and great pain, by means of diplobacilli. These ulcers differed from the serpiginous, not only in the bacilli, but also in the absence of any undermining of the margin, and they extend correspondingly slower. The infiltration was also usually more uniform, the ulcer more disk-shaped. Infiltration of the vitreous was rare. It was not accompanied by dacryocystitis, but was by a very persistent conjunctival catarrh. Uusually there is a previous injury of the cornea. Nearly all these ulcers recover under treatment with zinc without cauterization. These constitute more than a third of all corneal ulcers.

PAUL (181, Serum therapy, particularly in ulcus serpens corneæ) used Roemer's pneumococcus serum in patients with ulcus serpens with perfect result in 18 %, partial in 27 %. He thinks it probable that the serum is not always equally strong. The harmlessness of the serum has not yet been sufficiently

established, and the immunization is too short for it to be used as a prophylactic against the relatively rare ulcus serpens.

SZCZYBALSKI (182, A case of corneal ulcer from infection with the bacillus pyocyaneus) found the bacillus pyocyaneus in a large superficial ulcer of the cornea, which healed quickly after cauterization. Elsewhere this appears only as a harmless parasite on other pus agents. But in the eye it often has a specially virulent character, and may cause a rapid suppuration.

DE LAPERSONNE (184, Collargol in purulent inflammation of the cornea) has used collargol for about a year in all forms of purulent keratitis, of whatever origin, and in infected wounds of the cornea. He has also seen a hypopyon accompanying iritis of internal origin disappear in a few hours after the intravenous injection of collargol. The great advantage of collargol over silver nitrate consists in its painlessness and in the fact that it leaves no deposit in the cornea. The effect of its application is an immediate decrease of the pain and photophobia. In a few days the ulcer becomes clean, the hypopyon lessens and disappears, and healing takes place with the minimum of cicatricial formation. The instillation of two drops of a 5 % solution every two or three hours, or two or three times a day, is to be continued until complete recovery. It does not do away with the need of antiseptic irrigation, or the use of small doses of atropine, cauterization, or paracentesis of the anterior chamber for a large hypopyon, with subsequent irrigation with collargol. Simultaneous treatment of the lachrymal passage, including injections of collargol, is necessary.

VAUCLEROY (185, Unguentum Crede in ophthalmology) treated a traumatic ulcer of the cornea with hypopyon, which had lasted three weeks and had become infected by a blennorrhœa of the lachrymal sac, with a daily inunction of unguentum Crede, collargol ointment, about the orbit and eyelids. Every trace of pus had disappeared at the end of four days. He had also seen improvement and recovery in several cases of threatened panophthalmitis, and in one case of suppuration after tenotomy, follow the use of collargol.

FEILCHENFELD (188, Prophylaxis of the recurrence of erosions of the cornea) thinks that injuries of the cornea which show a tendency to recurring erosions, those made with finger nails,

hairs, etc., are infected. The best plan would be to cauterize, but it is usually sufficient to scrape and disinfect.

EVANS's (190, Hydatid cyst of the anterior chamber) patient was a child aged six, who was at Sydney, N. S. W. Floating in the anterior chamber of the left eye was a pearly-white cyst, apparently unattached. The cyst was extracted in much the same manner as a cataract, and the child recovered. On examination no hooklets or brood capsules were found, but the cyst wall was characteristic, and was not at all like that found in cysticercus.
MARSHALL.

LAUBER (192, Peripheral ectasia of the cornea) describes an ectasia which involved about a third of the margin of the cornea and gave the impression that the cornea was stretched in the region of an arcus senilis or a marginal ulcer. As both of these conditions were absent, the cause seemed to be a chronic mild inflammation which had thinned that portion of the margin.

WICHERKIEWICZ (193, Primary keratoconus) considers the cause of primary keratoconus to be an interference with the nutrition of the cornea, which is in turn dependent on a fault of the general condition. The apex of the keratoconus is usually directed downward and inward. The pressure of the lids influences the shape of the cornea, and explains the peculiar position of the apex. Seven cases are reported. BERGER.

On opening the anterior chamber for the purpose of performing an iridectomy for visual purposes, STOCK, (194, The secretion of the aqueous after puncture of the anterior chamber) saw the iris, which had been occupying its normal position, suddenly protrude forward. His explanation is that an energetic secretion of aqueous suddenly took place behind the iris.

After mentioning the recorded cases of this condition, STEPHENSON (195, Traumatic keratitis in the new-born) sums up as follows: "(1) that practically all have followed a difficult instrumental delivery; (2) that one eye alone is generally affected; (3) that they are associated with other signs of traumatism, as abrasions of the skin, bruises, subconjunctival or retinal hemorrhages, hyphæma, etc.; and (4) that a more or less characteristic form of corneal opacity is usually present."

Stephenson then records a case that recently occurred at Queen Charlotte's Lying-in-Hospital. Although there are, on an average,

1200 births there a year, and forceps are applied in fully 10 % of the cases, and a careful look-out has been kept for them, yet this is the first case that has been seen. The mother was aged forty-one, and had a small round pelvis. Considerable difficulty was experienced in delivery with forceps, and one blade was applied over the outer angle of the left orbit. Much bruising was found above the left frontal bone, and the eyelids were considerably swollen. The next day the cornea was found to be uniformly steamy, and there was a subconjunctival hemorrhage. The anterior corneal epithelium was stippled. There was at no time any discharge from the eye. Ten days later the only evidence of injury was a small linear opacity lying vertically in the outer part of the cornea. Three months after birth the condition remained unchanged. Stephenson also records a second case occurring in a child aged twelve. The appearance was characteristic, and on inquiry it was found that at birth forceps were used and the child's head was much injured by them, the scars of which remained visible. Much irregular astigmatism was present. MARSHALL.

Sections XIII.–XVIII. Reviewed by DR. O. BRECHT, Stettin.

XIII.—LENS.

196. LAGRANGE, FELIX, and AUBARET. **Intraocular lavage in the operation for cataract.** *Arch. d'ophtalmologie*, xxv., p. 73.

197. DE WECKER, L. **Recent attempts to cure cataract without operation.** *Annales d'oculistique*, cxxiii., p. 161.

198. DESBRIÈRES and BARGY, MAURICE. **A case of cataract caused by an electric discharge.** *Annales d'ocul.*, cxxxiii., p. 118.

199. BAHR, **Ripening of, and operations on, cataract.** *Münch. med. Woch.*, 1905, 1, p. 313.

200. HARMS, CL. (Breslau). **Spontaneous resorption of senile cataract in the closed capsule.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 147.

201. ZIRM, E. (Olmutz). **Our present knowledge regarding the nutrition and disturbances of nutrition of the lens.** *Wien. klin. Wochenschr.*, 1905, No. 12.

202. ROURE. **Two cases of ossification of the lens.** *Revue gén. d'opht.*, xxiv., p. 49.

203. MORAX, V. **Metallic foreign body in the lens. Extraction with the electro-magnet. Recovery without cataract.** *Annales d'oculistique*, cxxxiii., p. 122.

204. FRACHTMANN, H. **Indirect injury of the sphincter iridis, subluxation of the lens, and anterior cortical cataract from contusion of the eyeball.** *Wien. med. Wochenschr.*, 1905, No. 10.

205. LEBER, TH. **The pathogenesis of cataract.** *Klin. Monatsbl. f. Augenheilkunde,* xliii., p. 324. (Polemical.)

LAGRANGE and AUBARET (196, Intraocular lavage in the operation for cataract) consider that the attempts hitherto made to perform intraocular lavage after extraction of cataract could not be productive of good results because the instruments employed were impractical and because irritating antiseptic fluids were used. They consider Chibret's syringe as modified by Aubaret the only proper instrument which can be used for injection and aspiration simultaneously. A sterilized artificial aqueous should be used for injection. The results are very good in juvenile, soft, and traumatic cataract. It is of no use in phakosclerosis. They have performed one hundred lavages after cataract extraction without the least accident or loss of vitreous. They do not recommend this method in imbecile patients.

BERGER.

XIV.—IRIS.

206. STRAUB (Amsterdam). **Cyclitis.** *Ned. Tijdschr. v. Geneesk.*, vol. I, No. 5, 1905.

207. DE LAPERSONNE, F. **Does there exist a blennorrhagic iritis?** *Arch. d'ophtal.*, xxv., p. 137.

208. SONDER. **Blennorrhagic iritis.** *La clinique ophtalm.*, 1904, p. 373.

209. GALEZOWSKI. **Gonorrhœal irido-choroiditis.** *Le progrès médical*, 1905, p. 1.

210. POYNTON. **Some observations upon the pathogenesis of rheumatic iritis.** *Ophthalmoscope*, 1905, p. 123.

211. POSEY, W. C. **Intraocular tuberculosis with report of two cases.** *Trans. Amer. Ophthal. Soc.*, 1904.

212. KUTHE and GINSBERG. **Epithelioma of the ciliary body in a child five years old.** *Festschrift an Prof. Hirschberg.*

213. KNAPP, H. **Syphiloma of the ciliary body.** *Jour. Amer. Med. Assn.*, Jan. 14, 1905.

214. ALLING, A. N. **A congenital intraocular tumor containing epithelium and cartilage.** *Trans. Amer. Ophth. Soc.*, 1904.

215. MOISSONNIER. **Leucosarcoma of the ciliary body.** *Arch. d'ophtal.*, xxv., p. 144.

216. POULARD. **Melanosarcoma of the iris.** *Soc. d'opht. de Paris*, Feb. 7, 1905.

217. BEDNARSKI, ADAM. **Pathological changes in the zonule of Zinn.** *Arch. f. Augenh.*, li., p. 227.

218. GILBERT, W. (Bonn). **Two cases of rare congenital anomalies of the iris.** *Zeitschr. f. Augenheilk.*, xiii., 2, p. 144.

219. ENSLIN, EDUARD (Erlangen). **A hitherto undescribed malformation of the iris.** *Arch. f. Augenh.*, li., p. 346.

According to STRAUB (206, Cyclitis), when the ciliary body of an animal has been infected, an infiltrate appears at the place of infection, exudates are formed in the ciliary body, the optic nerve, and the retina, and there are frequently signs of Descemetitis and iritis. An affection of the ciliary body cannot be pointed out, but it may be assumed that the ciliary body is the principal seat of an inflammation if all the neighboring membranes, the sclera, cornea, iris, and choroid, are involved. Opacities appear in the vitreous, particularly about the pupil and near the retina.

JITTA.

DE LAPERSONNE (207, Does there exist a blennorrhagic iritis?) is of the opinion that the existence of an iritis due to blennorrhœa of the urethra has not yet been demonstrated. In none of the cases hitherto observed have gonococci been found in the aqueous. The variety of the clinical symptoms is opposed to any one etiology of this iritis, which is probably caused by secondary infection by staphylococci or other pathogenic microbes, or by the rekindling of a rheumatic affection. He quotes two interesting clinical histories in support of his views. He recommends for general treatment in these cases of iritis injections of pilocarpine, salicylate of soda, pyramidon, and preparations of colchicum.

BERGER.

POSEY (211, Intraocular tuberculosis with report of two cases) had one case of solitary tubercle of the iris in which tubercle bacilli were found and another of solitary tubercle of the choroid just posterior to the ora serrata associated with miliary tuberculosis of the iris. In both instances there was no evidence of lesions in other parts, either before or after enucleation.

ALLING.

In KNAPP'S (213, Syphiloma of the ciliary body) case the syphilitic tumor perforated the sclerotic in the upper part near the corneal periphery. Treatment with mercury, atropine, and bed-rest cured the disease, with recovery of normal vision and an unmutilated globe. ALLING.

The tumor described by ALLING (214, A congenital intraocular tumor containing epithelium and cartilage) arose from the root of the iris and ciliary body, and consisted of undifferentiated tissue and endothelial (or epithelial) cells. There was also in the centre of the tumor an area of hyaline cartilage. ALLING.

BEDNARSKI (217, Pathological changes in the zonule of Zinn)

reviews what is known of the pathological condition of the zonula and adds six investigations of his own. He confirms the view that thickening of the fibres of the zonula corresponds to atrophy of the fibres (bad staining, homogeneous appearance, hyaline degeneration), and this goes hand in hand with partial atrophy of the ciliary body.

One of GILBERT'S (218, Two cases of rare congenital anomalies of the iris) cases was a monolateral partial irideræmia, the other a monolateral multiple notching of the margin of the pupil.

ENSLIN (219, A hitherto undescribed malformation of the iris) saw an entropion of the iris with no other changes in a cadaveric eye. The pigment layer ended 0.4*mm* from the pupil, the pupillary margin lay back so that the sphincter formed a U-shaped curve. A ridge protruded from the pigment layer from which fibrous bands of the stroma extended in a fan-like form. The author is of the opinion that the condition was the result of intra-uterine changes.

XV.—CHOROID.

220. FISH, H. M. **Some cases of uveitis due to accessory sinus disease.** *Amer. Jour. of Ophth.*, Dec., 1904.

221. CHAILLONS. **Metastatic choroiditis with scleral perforation and subconjunctival abscess. Diagnosis of the origin of the suppuration by the microscopic examination of the pus..** *Soc. d'opht. de Paris*, Feb. 7, 1905.

222. POOLEY, T. R. **A case of conglomerate tubercle of the choroid.** *Trans. Amer. Oph. Soc.*, 1904.

223. DE SCHWEINITZ, G. E., and SHUMWAY, E. A. **Tuberculosis of the choroid. Perforation of the sclera. Extension posteriorly with involvement of the optic nerve. Histological and bacteriological examination of the specimen.** *Ophth. Record*, Dec., 1904.

FISH (220, Some cases of uveitis due to accessory sinus disease) offers six cases in proof of his belief that disease of the frontal sinus is a frequent cause of inflammation of the uveal tract without involvement of the orbit. ALLING.

XVI.—VITREOUS.

224. FEJER, JULIUS. **Bilateral hemorrhage into the vitreous.** *Centrl. f. prakt. Augenheilk.*, xxix., p. 10.

225. ELSCHNIG (Vienna). **Hæmolytic injections in recurrent hemorrhages into the vitreous.** *Arch. f. Augenheilk.*, li., p. 354.

226. KIPP, C. J. **An uncommon congenital anomaly in the vitreous chamber and the inner membranes of both eyes.** *Trans. Amer. Oph. Soc.*, 1904.

FEJER (224, Bilateral hemorrhage into the vitreous) treated a man thirty-three years old who had large hemorrhages in the vitreous of both eyes, probably of specific origin.

ELSCHNIG (225, Hæmolytic injections in recurrent hemorrhages into the vitreous) was induced to try an injection of hæmolysin in an eye almost blind from recurring vitreous hemorrhages by Roemer's demonstration at the Congress at Heidelberg in 1903. After removing a certain quantity of the fluid vitreous, he injected an equal quantity of sterilized immune serum of rabbits. The result was bad. The eye had to be enucleated because of the increased tension and unbearable pain with complete amaurosis, and the pathological examination showed a plastic iridocyclitis and necrosis of the vitreous and retina. In spite of this unfortunate result the author does not look upon Roemer's method as hopeless, but recommends that the hæmolytic serum be thinned with physiological salt solution to eliminate other cytotoxic components, to replace only a portion of the fluid vitreous removed to prevent the increase of tension, and, in case the latter does occur, to perform paracentesis of either the anterior chamber or of the vitreous.

KIPP (226, An uncommon congenital anomaly in the vitreous chamber and the inner membranes of both eyes) shows a case probably of persistent retinal artery associated with a narrow coloboma of the choroid extending outward. Retinal vessels follow the course of the cleft. ALLING.

XVII.—GLAUCOMA.

227. FRENKEL, HENRI. **Studies of the arterial tension in glaucoma.** *Arch. d'opht.*, XXV., p. 27.

228. LAMBERT, W. E. **A case of simple glaucoma with some unusual features.** *Trans. Amer. Ophth. Soc.*, 1904.

229. KILLICK. **Acute glaucoma occurring simultaneously in both eyes.** *British Med. Jour.*, 1904, 2, p. 1517.

230. URIBE Y TRONCOSO. **Experimental studies regarding the filtration of saline and albuminous fluids which traverse the anterior chamber, and its part in the production of glaucoma.** *Ann. d'ocul.*, CXXXIII., p. 5.

231. DIANOUX. **Glaucoma and sclerotomy.** *Annales d'oculistique*, CXXXIII., p. 81.

232. ABADIE, CH. **Glaucoma and sclerotomy.** *Ibid.*, p. 202. (Polemical article combating Dianoux's opinion.)

233. SENN. **A warning against the unrestricted use of adrenalin in glaucoma.** *Wochenschr. f. Therapie u. Hyg. d. Auges*, 1905, No. 17.

234. Reis, W. **Investigations regarding the pathological anatomy and the pathogenesis of congenital hydrophthalmos.** *Arch. f. Ophth.*, lx., 1, p. 1.

Frenkel (227, Studies of the arterial tension in glaucoma) shows the clinical frequency of arteriosclerosis and the great variability of the arterial tension, from 2 to 15*mm.* In 14 out of 15 cases the arterial tension was increased, though not to so high a degree as in albuminuric retinitis. Zimmermann's theory, that a reduction of the arterial tension may favor an attack of glaucoma, he considers incorrect. The quantity of NaCl present he does not find to have any influence on the glaucoma. The excretion of methyl blue through the kidneys is retarded in glaucoma, though not so much as in cataract. His conclusion is that the increase in the arterial tension plays an important part in the pathogenesis of glaucoma. Berger.

A case with a record of physiological excavation later appeared with glaucoma simplex. Lambert (228, A case of simple glaucoma with some unusual features) questions whether a physiological excavation has any relation to pathologic cupping. Cupped disk in glaucoma is for the most part mechanical and due to high tension, hence if this patient formerly had excavation it was either pathologic or a coincidence. Alling.

Dianoux (231, Glaucoma and sclerotomy) is of the opinion that sclerotomy is productive of good results in glaucoma when it is performed so as to leave a filtration cicatrix, while if the latter is not formed a sclerotomy acts only as a paracentesis of the anterior chamber. For four or five days after a sclerotomy he gently massages the eye in order to re-open the wound and allow of the escape of part of the aqueous, and at the same time uses collyria containing eserine, pilocarpine, cocaine, and adrenalin. At the end of a week the patients are discharged and advised to maintain the methodical use of myotics and massage of the eye. Berger.

Reis (234, Investigations regarding the pathological anatomy and the pathogenesis of congenital hydrophthalmos) gives an accurate anatomical description of seven cases of infantile glaucoma. In four, the filtration angle was open, but Schlemm's canal more or less stenosed or completely closed ; in three, the filtration angle was obliterated. The pathogenesis is not the same in all cases. In the majority, abnormal conditions at the filtration angle prevent the normal exit of the fluid secreted, and these are

frequently to be found in Schlemm's plexus. The obliteration of Schlemm's canal may be ascribed to inflammation, or to congenital faults of development. In many cases this obliteration is the one demonstrable anatomical change, which shows it to be of great etiological importance.

XVIII.—SYMPATHETIC OPHTHALMIA.

235. STEINDORFF. **The frequency and curability of sympathetic ophthalmia.** *Festschrift an J. Hirschberg.*

236. GOLOVINE, L. L. **The importance of cytotoxines in ocular pathology, and particularly in the pathogenesis of sympathetic inflammation.** *Archives d'ophtalmologie*, XXV., p. 98.

237. SATTLER, R. **Sympathetic neuro-retinitis and serous uveitis following enucleation with transplantation of glass globe; resection of the optic nerve; recovery.** *Trans. Amer. Ophth. Soc.*, 1904.

GOLOVINE (236, The importance of cytotoxines in ocular pathology, and particularly in the pathogenesis of sympathetic inflammation) thinks that the cytotoxic theory alone can explain the pathogenesis of sympathetic ophthalmia. He injected an emulsion of the ciliary body and iris of a dog into the peritoneum of a rabbit. The blood serum of the last rabbit was injected locally into the eye of a dog, where it produced a slight inflammation with circumcorneal injection and deposits on Descemet's membrane. Intravenous injection of the cytotoxic serum produced no macroscopic change in the eye, but microscopically there were found in the ciliary body a fibrinous subepithelial exudate, swelling and vacuolization of the epithelial cells of the pars ciliaris retinæ, and atrophy of pigment in the pigment cells. The author assumes that a toxin which affects the ciliary body alone (cyclo-toxine) and a lysin affecting the pigment (pigmento-lysin) are contained in the cytotoxine. He considers that the theory of the cytotoxine can also explain many other diseases of various parts of the eye when cytotoxines are produced by cell destruction and at the same time the normal antitoxic functions are weakened.

SATTLER (237, Sympathetic neuro-retinitis and serous uveitis following enucleation with transplantation of glass globe; resection of the optic nerve; recovery) reports a case in which, forty-eight days after implantation of an artificial globe, pronounced neuro-retinitis with serous uveitis was discovered. Vision was reduced to movements of the hand. Two and one-half centimetres of the optic nerve were resected and the eye rapidly recovered.

ALLING.

Sections XIX.—XXII. Reviewed by DR. H. MEYER, Brandenburg.

XIX.—RETINA AND FUNCTIONAL DISTURBANCES.

238. v. GEUNS, J. R. **A rare and peculiar retinal affection.** *Ned. Tijdschr. v. Geneesk.*, Bd. 1, No. 3, 1905.

239. JACOBY, E. **Another case of retinal disease with formations resembling aneurysms on the retinal vessels.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 137.

240. HARMS, A. **Occlusion of the trunk of the central vein of the retina.** *Ibid.*, p. 143.

241. GONIN, J. **Re-establishment of the retinal circulation by anastomosis following obstruction of the central artery.** *Annales d'oculistique*, cxxxiii., p. 167.

242. CRAMER, E. **Traumatic detachment of the retina of tardy appearance.** *Zeitschr. f. Augenheilk.*, xiii., 1, p. 22.

243. ZASKIN, A. **Detachment of the retina.** *Westn. Ophth.*, 1905, 1.

244. WESSELY, K. **Action of the pressure bandage in detachment of the retina.** *Klin. Monats, f. Augenheilk.*, xliii., 1, p. 654.

245. SATTLER, H. **Treatment of detachment of the retina.** *Deutsche med. Wochenschr.*, 1905, Nos. 1 and 2.

246. VERHOEFF, F. H. **A rare tumor arising from the pars ciliaris retinæ (terato-neuroma), of a nature hitherto unrecognized, and its relation to the so-called glioma retinæ.** *Trans. Amer. Ophth. Soc.*, 1904.

247. PARSONS, HERBERT. **A case of glioma retinæ in a shrunken globe.** *Royal London Ophth. Hosp. Rep.*, xvi., 2, p. 141.

248. WEHRLI, E. **The relation of the retinal hemorrhages which occur during birth to the pathogenesis of glioma retinæ.** *Correspondenz-Blatt f. Schweizer Aerzte*, 1905, No. 2.

249. ASCUNCE. **Glioma of the retina.** *Annales d'oculistique*, cxxxiii., p. 85.

250. HANCOCK, ALBERT. **A case of tubercle (?) of the retina.** *Royal London Ophthalmic Hospital Reports*, xvi., 2, p. 150.

251. HIRSCH, C. **Pigmentation of the retina.** Berlin, 1905.

Prompted by the publication of v. Hippel's "Two rare cases of retinal disease," JACOBY (239, Another case of retinal disease with formations resembling aneurysms on the retinal vessels) reports an analogous case in which the eyes gradually became blind. Tuberculosis and syphilis were excluded. Ophthalmoscopically there were on the right side optic atrophy and two enormously dilated vessels, an artery and a vein, which presented the appearance of a red tumor. The artery seemed broken in many places, and at these places was somewhat swollen and again constricted. A similar condition was present on the left side, except that here there were three such masses, which were more yellowish

centrally. No hypothesis was advanced as to the nature of the disease.

HARMS (240, Occlusion of the trunk of the central vein of the retina) adds four cases to the five already known of pure, complete occlusion of the trunk of the vein, which have been investigated anatomically. They presented the clinical pictures of hemorrhagic retinitis with subsequent glaucoma, or of hemorrhagic glaucoma. They represent four different anatomical possibilities in the way of venous occlusion. 1. Marantic thrombosis. 2. Thrombosis on the farther side of a narrowed place in an almost normally large lumen, at all events through the formation of a whorl with slight disturbance of the circulation. 3. Primary meso- and endophlebitis. 4. Thrombosis due to a pre-existing endophlebitis.

GONIN'S (241, Re-establishment of the retinal circulation by anastomosis following obstruction of the central artery) case was one of sudden blindness with symptoms of obstruction in the central artery of the retina in a woman sixty-four years old. A collateral circulation was established through a number of little arteries which came from the papilla and joined with branches of the central artery. Nettleship has reported a similar case. Gonin supposes that in both cases the very fine anastomotic twigs between the branches of the central artery and those of the short posterior ciliary arteries described by Leber were more superficial than usual and could be seen with the ophthalmoscope.

BERGER.

CRAMER (242, Traumatic detachment of the retina of tardy appearance) reports a case in which a blow from a flail was received on the upper-inner margin of the orbit and the corresponding quadrant of the eyeball. A laceration of the retina was produced on the opposite side, which remained unnoticed for five weeks, and then caused a detachment of the retina.

ZASKIN (243, Detachment of the retina) reports a case in which a penetrating wound in the sclera was produced by an explosion. After three weeks it had healed completely with a shrunken scar. Two years later the retina became detached.

HIRSCHMANN.

WESSELY (244, Action of the pressure bandage in detachment of the retina), in the course of the treatment of a fresh case of retinal detachment, three times replaced the retina by means of a

firm pressure bandage and finally obtained a replacement which has lasted six months. He sought to determine experimentally the effect of constant pressure, but was unable to obtain a single case of detachment in an animal. By compression, the fluid of the vitreous is pressed out and the tension markedly lowered. But diminution of the volume of the vitreous is not of great importance either in the production or the replacement of the detachment. Perhaps it may be otherwise with fluid vitreous. Wessely considers it possible that vitreous fluid is absorbed as the result of the compression, but a diminution of the post-retinal fluid at the same time can have a favorable influence on the process of reattachment.

SATTLER (245, Treatment of detachment of the retina) recommends quiet rest in the dorsal position while wearing dark gray glasses in order to avoid excessive movements of the eyeball and the consequent effect on the vitreous. He does not recommend a pressure bandage. At the same time diuresis should be promoted and injections of salt solution should be made subconjunctivally. This treatment is to be continued two or three months. If the result is negative operative intervention may be employed, but with much less hope of improvement. The simple scleral puncture he considers the best operation.

After an exhaustive description of the microscopic study of his specimen and discussion of its nature, VERHOEFF [246, A rare tumor arising from the pars ciliaris retinæ (terato-neuroma), of a nature hitherto unrecognized, and its relation to the so-called glioma retinæ] concludes as follows: (1) From the unpigmented epithelium of the pars ciliaris retinæ there may arise a tumor which exhibits the structure of an embryonic retina in various stages of development. (2) Such a tumor is malignant, but to how high a degree is uncertain. (3) It is the only retinal tumor in which neuroglia has been demonstrated, nevertheless it is not a glioma. (4) It is not to be confounded with the small benin epithelial growths sometimes described as adenomata of the ciliary body. ALLING.

PARSONS (247, A case of glioma retinæ in a shrunken globe) observed a bilateral glioma of the retina which had caused the death of an 18-months-old boy. The right eye was shrunken and contained in addition to the glioma peculiar degenerated cells in the vitreous, not characteristic of glioma. Although the shrink-

ing of the globe may have been the result of a perforation of the cornea which occurred during an attack of measles, yet there have been already published 14 cases of retinal glioma with phthisis bulbi. ABELSDORFF.

WEHRLI (248, The relation of the retinal hemorrhages which occur during birth to the pathogenesis of glioma retinæ) has drawn his conclusions from the pathological fact that the retina alone is affected, from the ophthalmoscopic picture, the age of the children affected by glioma, as well as from the facts that these tumors may occur simultaneously in both eyes, or may affect the same eye always in a certain family. The genesis of the glioma may be traced to persistent embryonal tissue which is induced to proliferate by injury, usually lacerations or hemorrhages in the retina during birth.

HIRSCH (251, Pigmentation of the retina) has studied the pathological changes in the retinal pigment in a series of cases, and divides them according to the etiology into cases due to acute degeneration of the retina, cases in which a laceration of the posterior ciliary arteries has probably taken place, cases of pigment degeneration in consequence of closure of a branch of a retinal vessel by an intraocular foreign body, and finally cases of direct injury to the pigment epithelium. In every case the cause of the imperfect nutrition and the degeneration of the pigment epithelium is a disturbance of its nutrition through the choriocapillaris. The author describes an interesting case of injury from a blow of a cow's horn, which presented the anatomical and ophthalmoscopic picture of retinitis pigmentosa. There was an acute circulatory disturbance, the same as that present in retinitis pigmentosa from sclerosis of the vessels. Although in retinitis pigmentosa the form of disturbance is not clear as yet, hereditary change of the vascular walls is at any rate necessary, not only in the choriocapillaris, but also in the retinal arteries, changes which are parallel to each other. The variations from this principal form are known as anomalies. He also reports three cases of injuries from foreign bodies in which atrophy of the retina followed by migration of pigment was observed, and finally three cases of direct destruction of the pigment epithelium. The retinal atrophy caused by direct injury is never very marked. A fissure of the vitreous lamella may co-exist with a laceration of the layer of pigment epithelium, and then causes the picture of

a rupture of the choroid through the hyaloid membrane becoming visible, not, as is usually assumed, through the sclera coming into view. This article should be read in the original.

XX.—OPTIC NERVE.

252. RABITSCH, F. **Colloid bodies in the optic nerve head.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 72.

253. BEARD, C. H. **Temporal cleft of the nerve head.** *Jour. Amer. Med. Assn.*, Jan. 14, 1905.

254. WALTER, N. SHARP. **A case of probable rupture of the optic nerve.** ARCH. of OPHTH., xxxiv., 2, p. 131.

255. PAUL, L. **A case of complete separation of the retina from the optic nerve after injury to the globe.** *Kl. Monatsbl. f. Aug.*, xliii., p. 185.

256. DE SCHWEINITZ, G. E., and CARPENTER, J. T. **The ocular symptoms of lesion of the optic chiasm with the report of three cases of bitemporal hemianopsia.** *Jour. Amer. Med. Assn.*, Jan. 14, 1905.

257. POULARD, A. **Some clinical observations of hemianopsia.** *Arch. d'ophtal.*, xxv., p. 18.

258. VAN DUYSE. **Incomplete bilateral hemianopsia with preservation of the macular field, following a shot-wound in the temporal region.** *Arch. d'opht.*, xxv., p. 4.

259. VEASEY, C. A. **Observation of a case of bitemporal hemianopsia with some unusual changes in the visual field.** *Trans. Amer. Ophth. Soc.*, 1904.

260. HEINE. **Central scotoma in congenital amblyopia.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 10.

261. TSCHISTJAKOW, P. J. **Primary tumor of the optic nerve.** *Westn. Ophth.*, 1905, vi.

262. VALUDE, E. **Note on the action of antipyrin in optic atrophy.** *Annales d'oculistique*, cxxxiii., p. 195.

263. MAYON, J. **Intradural tumor of the optic nerve. Neuro-fibromatosis.** *Royal London Hospital Reports*, xvi., 2, p. 155. (Description of a typical case in a girl five years old. Removal with preservation of the eyeball.)

RABITSCH (252, Colloid bodies in the optic nerve head) observed an excessive development of colloid bodies in the optic nerve head which had materially interfered with the vision and the visual field. The published cases of colloid formations he divides into those due to inflammation and those of purely spontaneous origin. In the latter cases it must be supposed that the colloid formations act as foreign bodies and induce a chronic inflammation. Rabitsch's own case belonged to this class.

BEARD (253, Temporal cleft of the nerve head) describes a condition of the nerve head characterized by a white, slightly depressed triangular sector on the temporal side. The retinal vessels emanate at the side. The nerve fibres are diminished in

number over this area. Associated with this there are anomalies of the retinal vessels and scanty choroidal pigment. Errors of refraction are not usually present in marked degree.

ALLING.

PAUL (255, A case of complete separation of the retina from the optic nerve after injury to the globe) adds a tenth case to the nine already reported of separation of the retina from the optic nerve. It is the only one in which the separation was complete. The eye was driven directly back upon the optic nerve by a blow. As hemorrhages into the vitreous did not appear immediately, the ophthalmoscopic pictures could be observed for some days. The laceration of the vessels produced a picture similar to that of embolism of the central artery. A blood clot occupied the place of the papilla on the gray background of the detached retina. The empty veins were refilled with blood after the lapse of a few days. Unfortunately an anatomical examination of the case was impossible.

POULARD (257, Some clinical observations of hemianopsia) reports two clinical cases of hemianopsia. In the first case there was hemianopic color-blindness with coincident reduction of the sensibility of the retina for white. Poulard claims that this case can be explained without assumption of a nervous centre for the color-sense. In the second case there was first bilateral amaurosis, then left-sided hemianopsia, followed by a right-sided hemianopsia, which produced at first bilateral blindness, but after some time vision partially returned in the right lower quadrants of the visual field. Poulard believes that two distinct lesions affected the optic radiations or the cortical visual centres on the two sides at different times. BERGER.

VAN DUYSE (258, Incomplete bilateral hemianopsia with preservation of the macular field, following a shot-wound in the temporal region) describes a case of incomplete hemianopsia affecting chiefly the upper left quadrants of the visual field, which followed a shot-wound of the right temple. The regions of both maculæ were preserved. He thinks there was a lesion of the ventral fibres of Gratiolet's optic radiation on the right side. The preservation of the macular field he explains by means of Flechsig's theory that the macula fibres occupy the lowest part of the optic radiations, which in this case was uninjured. BERGER.

VEASEY (259, Observation of a case of bitemporal hemianopsia

with some unusual changes in the visual field) believes that his patient had a vascular tumor of some sort in front of the chiasm, which would account for the frequent variations which take place in the field. A skiagraph showed a faint shadow in the place indicated. ALLING.

HEINE (260, Central scotoma in congenital amblyopia) has investigated 100 cases of congenital amblyopia for central scotoma and found it present in 90 %, its extent corresponding to the visual acuteness. It may be round or oval, absolute or relative, and is often monocular. Hess's groups of dots were not usually useful in the demonstration. There seems to be a difference between acquired and congenital defects. Concentric contraction was rarely present. The scotoma is either functional and acquired in early childhood, or caused anatomically and congenital. A congenital defect in the region of a macula plays an important part in the etiology of strabismus, but it is not the only cause, as is shown by the fact that not all eyes with congenital amblyopia squint.

TSCHISTJAKOW'S (261, Primary tumor of the optic nerve) patient, twenty years old, had exophthalmos and divergence of the left eye, with its motility limited inward and upward. V = 0. Enucleation after Kroenlein's operation. The tumor involved the entire orbital part of the optic nerve and was enveloped by the optic-nerve sheath. The microscope showed it to be a glioma with myxomatous foci. HIRSCHMANN.

VALUDE (262, Note on the action of antipyrin in optic atrophy), who in 1893 recommended the use of antipyrin in optic atrophy, has finally concluded that it is useful only in descending atrophy in consequence of infectious encephalitic disease. He injects in the dorso-lumbar region every second day *2cm* of a solution of antipyrin 25, cocaine mur. 0.25, distilled water 50. Twenty-five injections are necessary, but it may be advantageous to repeat this series of injections. BERGER.

XXI.—INJURIES, FOREIGN BODIES, PARASITES.

264. HANSELL, H. F. **Traumatic emphysema of the orbit and lids.** *Trans. Amer. Ophthal. Soc.*, 1904.

265. FEILKE, O. **Double perforation of an eyeball (anterior and posterior wall) by a hook needle. Recovery with perfect vision.** *Arch. f. Augenheilk.*, lii., p. 157.

266. PEIPER, O. **Shot-wounds of the eye.** *Inaug. Diss.*, Berlin, 1905.

267. HIRSCHBERG, J. **Fragment of iron in the lens. Blindness from increase of tension.** *Ctrlbl. f. Augenheilk.*, xxix., p. 41.

268. BREKLE, R. **Successful extraction of pieces of copper from the eye.** *Inaug. Diss.*, Tubingen, 1904.]

269. DE SCHWEINITZ, G. E. **Concerning certain non-traumatic perforations of the macula lutea.** *Trans. Amer. Ophth. Soc.*, 1904.

270. CASSIMATIS, C. **Concerning foreign bodies in the eye.** *Archives d'ophtalmol.*, xxv., p. 162.

271. CHAVEZ, L. **Intraocular cysticerci. Extraction of a subretinal cysticercus.** *Recueil d'ophtalmologie*, xxvii., p. 1.

272. SNELL, SIMEON. **The electro-magnet in ophthalmic surgery.** *Ophthalmoscope*, Feb., 1905.

273. COLLINS, Sir W. J. **Traumatic palsy of levator palpebræ, superior rectus, and sphincter pupillæ, with marked monocular amblyopia, persisting for several days and terminating in recovery.** *Ophthalmoscope*, March, 1905.

FEILKE [265, Double perforation of an eyeball (anterior and posterior wall) by a hook needle. Recovery with perfect vision] had a case of double perforation of the eyeball by a hooked needle. He managed to free the barbed point and to withdraw it through the wound. The injured portion of the retina was not important to the function of the eye and therefore perfect vision was secured.

PEIPER (266, Shot-wounds of the eye) has presented in statistical form the shot-wounds which have been treated in the University eye clinic at Berlin during the years 1897–1902.

HIRSCHBERG (267, Fragment of iron in the lens. Blindness from increase of tension) saw a case of injury to the eye two years after its occurrence. A piece of iron was encapsulated in the anterior part of the lens and had induced glaucoma. Enucleation was performed.

BREKLE (268, Successful extraction of pieces of copper from the eye) reports 7 successful cases of extraction of pieces of copper from the eye and claims that the prognosis is not as bad as is usually supposed. At any rate these cases show that an attempt to extract is indicated even when suppuration has commenced. In such cases the use of the ophthalmoscope as a guide to the seizing instrument is of no avail.

The so-called "hole in the macula," a number of examples of which have been recorded, is usually of traumatic origin. DE SCHWEINITZ (269, Concerning certain non-traumatic perforations of the macula lutea) presents two cases of exactly similar

character which were not due to traumatism. One case was that of chronic heart disease and arterio-sclerosis. In the macular region was a sharply defined reddish area slightly sunken below the level of the retina (+ 0.5 D.). The other lesion was of the same sort, occurring in an eye which had suffered from iritis. He thinks that the condition may be due to a form of atrophy confined to the macula. ALLING.

SNELL (272, The electro-magnet in ophthalmic surgery) was the pioneer in the use of the electro-magnet, and he commenced his investigations 27 years ago, and the first case on which it was used was in 1880. His experience now amounts to fully 300 cases. As is well known, Snell's magnet is one of the varieties of hand magnets, and although he has nothing whatever to say against the giant magnets, yet his paper has for its object the setting forth the advantages of the hand magnet. The ease with which it can be handled, its portability, and its cheapness are very strong points in its favor when compared with the giant instrument of Haab. MARSHALL.

COLLINS'S (273, Traumatic palsy of levator palpebræ, superior rectus, and sphincter pupillæ, with marked monocular amblyopia, persisting for several days and terminating in recovery) patient was a boy, aged fourteen, who was admitted suffering from ptosis of the right eyelid and marked dilatation of the pupil. He stated that five days previously he had been thrust in the right eye with a pitchfork. No evidence of a penetrating wound could be detected, but there was a minute wound of the conjunctiva near the inner canthus. In addition to complete ptosis there was no upward movement of the eyeball, though the other movements were present, the pupil was widely dilated and inactive, and the vision was reduced to bare light perception. There was no sensory disturbance. Opthalmoscopically the eye was normal. After a few weeks all the symptoms passed off, and in discussing the possible cause for all this disturbance, Sir William Collins considers that the trauma occasioned some "molecular" changes in the optic nerve, the ciliary nerves or muscle, and the levator or rectus superior muscle or their respective nerve supplies, which abolished temporarily their respective functions, though only for some two or three weeks. MARSHALL.

XXII.—OCULAR DISTURBANCES IN GENERAL DISEASES.

274. BORLAND, H. B. **A case of exophthalmos in the newly born.** *Lancet*, Nov. 12, 1904.

275. CRAWFORD, L. **A case of exophthalmos in the newly born.** *Lancet*, Nov. 19, 1904.

276. FATRY. **Contribution to the study of ocular lesions in malformations of the skull, particularly in oxycephaly.** *Thesis*, Paris, 1905.

277. UHTHOFF, W. **Concerning high degrees of exophthalmos in deformities of the skull.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 1.

278. NICOLAS and CADE. **Neoplasm of the stomach; endocarditis; cerebral embolism; conjugate deviation of the head and of the eyes, with hemianopsia from softening.** *Soc. méd. de l' hôp. de Lyon*, Nov. 15, 1904.

279. BABINSKI, J., and Mlle. TONFESCO, S. **Cyanosis of the retina in a case of stenosis of the pulmonary artery without general cyanosis.** *Annales d'oculistique*, cxxxiii., p. 115.

280. STRZEMINSKI. **Rare complication of zoster ophthalmicus.** *Recueil d'ophtalmologie*, xxvii., p. 16.

281. SIMON, R. **A case of detachment of the choroid and retina with cyclic albuminuria.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 221.

282. CABANNES. **Optic neuritis and atrophy in facial erysipelas.** *Congrès des méd. alienistes et neurologistes*, Pau, 1904.

283. BRICHE, RAVIART, and CAUDRON. **Contribution to the study of the state of the fundus of the eye in general paralysis.** *Congrès des méd. alienistes*, 1904.

284. KOLBE. **Surgery of tumors of the prefrontal lobe of the brain; their localization by ophthalmoscopic examination.** *Thesis*, Paris, 1905.

285. WOOD, C. A. **Glioma of the pons with the eye symptoms, and report of the autopsy in a child seven years old.** *Ophth. Rec.*, Dec., 1904.

286. DE SCHWEINITZ, G. E. **The ocular symptoms of cerebellar tumor.** *N. Y. Med. Jour.*, Feb. 11, 1905.

287. HOLDEN, W. A. **A case of mind-blindness unique in that the entire mesial surface of both occipital lobes and both optic radiations were preserved.** *Trans. Amer. Ophth. Soc.*, 1904.

288. KALT. **Hysterical amblyopia following enucleation of an injured eye.** *Soc. d'ophtal. de Paris*, Dec. 6, 1904.

289. PFINGST, A. S. **A case of bilateral hysterical amaurosis.** *Oph. Record*, Feb., 1905.

290. REDSLOB, D. **Bitemporal hemianopsia and diabetes insipidus.** *Klin. Monatsbl. f. Augenheilk.*, xliii., 1, p. 226.

291. HOUDART. **Septic ophthalmia in a patient suffering from diarrhœa of hot countries.** *Recueil d'ophtalmologie*, xxvii., p. 65.

292. PERNOT. **Oculo-pupillary troubles in chronic pulmonary tuberculosis and in pneumonia at the apex.** *Thesis*, Paris, 1905.

293. GERARD, GEORGES. **Two cases of optic atrophy following ozæna.** *Echo médical du Nord*, Oct. 2, 1904.

294. CHAUFFARD, A., and LEDERICH, L. **Inequality of the pupils in pleurisy with effusion.** *Arch. gén. de méd.*, March 7, 1905.

In BORLAND'S (274, A case of exophthalmos in the newly born) case the child was born of a healthy mother, quite naturally and without the aid of forceps. Some hours after birth an effusion of blood was noticed under the conjunctiva of the right eye, which,

on the next day, was found to project downwards and forwards. There was paralysis of the superior rectus, which passed off, and the child completely recovered. MARSHALL.

CRAWFORD (275, A case of exophthalmos in the newly born) met with marked exophthalmos of one eye in an infant following natural labor. The condition completely cleared up with apparently no affection of the sight. MARSHALL.

UHTHOFF (277, Concerning high degrees of exophthalmos in deformities of the skull) has seen three cases of high degrees of exophthalmos with oxycephalia, hydrocephalus externus, and hydrocephalus internus. In all three cases the principal cause of the displacement of the globe was the change in the form of the orbit produced by the dislocation of the bones. Venous stasis from increased intracranial pressure with compression of the cerebral sinuses can enter little into the etiology of the great exophthalmos in these cases.

NICOLAS and CADE (278, Neoplasm of the stomach; endocarditis; cerebral embolism; conjugate deviation of the head and of the eyes, with hemianopsia from softening) report a case of cancer of the stomach and of endocarditis, in which a centre of softening was produced in the left calcarine fissure by embolism, which induced symptoms of hemianopsia. A simultaneously occurring conjugate deviation of the head and the eyes may be explained in this case as the result of the hemianopsia, as the head and eyes were turned toward the direction of the preserved portions of the field. In fact the deviation steadily increased during the coma which preceded death, and at the autopsy no changes could be found aside from the focus of softening in the calcarine fissure. BERGER.

BABINSKI and Mlle. TONFESCO (279, Cyanosis of the retina in a case of stenosis of the pulmonary artery without general cyanosis) report a case of stenosis of the pulmonary artery with no general symptoms of cyanosis in which there was evident cyanosis of the retina. BERGER.

SIMON (281, A case of detachment of the choroid and retina with cyclic albuminuria) observed a detachment of the choroid and retina in a young girl with cyclic albuminuria. The detachment of the choroid was determined from the retained functional capacity of the rods of the detached retina, because the rods receive their visual purple from the pigment epithelium which

remains attached to the choroid. An exact demonstration was possible in this case because only a small portion of the retina was detached while the rest retained good vision.

BRICHE, RAVIART, and CAUDRON (283, Contribution to the study of the state of the fundus of the eye in general paralysis) investigated the fundus of the eyes of twenty-three women suffering from progressive paralysis and found changes in eighteen. In three the margins of the papillæ were wasted away, in eleven the papillæ were pale, in two they were white with obscure margins, and in two the optic nerves were atrophic. Most of the patients were in the advancing stage of the paralysis.

BERGER.

WOOD'S (285, Glioma of the pons with the eye symptoms and report of the autopsy in a child seven years old) patient, a child seven years old, had complained of headache, vertigo, and nausea. There were mental dulness, paresis of both external recti, and choked disks. Autopsy revealed nodular irregularities on the lower surface of the pons. On section the right half of the pons, and to some extent the left, was found to be infiltrated with neoplastic tissue, which proved to be glioma. ALLING.

KALT (288, Hysterical amblyopia following enucleation of an injured eye) observed a traumatic iridocyclitis, which rendered enucleation necessary, in a powerful man forty-nine years old. Fourteen days after the enucleation hysterical amblyopia appeared The vision fell to $\frac{1}{10}$, the fields for white and colors were concentrically contracted, and there were disturbances of sensation on the face, the back, and the hands. Kalt conceives the case to be one of traumatic hysteria, but it is noteworthy that the hysterical amblyopia appeared fourteen days after the enucleation had taken place. BERGER.

Bilateral hysterical blindness is uncommon. The patient of PFINGST (289, A case of bilateral hysterical amaurosis) suddenly developed blindness in both eyes, associated with hysterical symptoms. No pathologic lesions and a rapid recovery confirmed the diagnosis. ALLING.

REDSLOB (290, Bitemporal hemianopsia and diabetes insipidus) saw a case of severe injury to the head of a child who had a complete defect of the temporal portion of the visual field. He considered the cause to be a laceration of the decussating fibres of the chiasm in the median line.

GERARD (293, Two cases of optic atrophy following ozæna) reports two cases of bilateral optic atrophy, the consequence of ozæna. His explanation is that the disease was transmitted through the accessory sinuses of the nose to the base of the brain by means of osteitis or inflammation of the veins of the diploë.

BERGER.

CHAUFFARD and LEDERICH (294, Inequality of the pupils in pleurisy with effusion) found in forty-seven per cent. of the cases of pleurisy with effusion an inequality of the pupils. The pupil on the side with the exudate was dilated, but this was evident only in moderate illumination. They suppose that this is a symptom of inhibition of the fibres which conduct the light reflex.

BERGER.

BOOK REVIEWS.

I. **Atlas and Epitome of Operative Ophthalmology,** by Prof. O. HAAB, of Zurich. Revised translation, with notes and additions, edited by G. E. DE SCHWEINITZ, A.M., M.D., Prof. of Ophthalmology, University of Pennsylvania, etc. With 30 colored lithographic plates and 154 text-cuts. W. B. Saunders & Co., 1905.

Prof. Haab says: "As a rule, mere verbal description does not suffice to give a clear idea of operative procedures—pictorial illustration is indispensable." The illustrations in this book are reproductions of the photographs made under Haab's direction. The instruments here represented were taken from Weiss & Son, London; H. Windler, Berlin; H. Wulfing-Lüer, Paris; G. Tiemann & Co., New York; and Chambers, Inskeep, & Co., of Chicago.

Haab and his eminent teacher, Horner, lay great stress upon the fact that the patient, after capital operations, must, as much as it is possible, be kept strictly quiet. The reviewer, after cataract extraction and some other important operations, lets the patients be watched, during the first night, by a trusty nurse, after they have taken a morphine pill before and after the operation.

The arrangements of the operating and sleeping rooms are carefully described, with many good hints by the editor which, throughout the book, are useful additions.

Ether is considered far safer than chloroform (Editor), which is heartily endorsed by the reviewer, who, during nearly fifty years of practical eye and ear surgery, has never had a death. He gives the anæsthetic himself and has pulse and respiration carefully watched so that the resuscitation exercises can immediately begin. He does it by the old Marshall Hall's method—that is, the upper part of the body is turned on the front and then back, which is done as slowly as regular breathing. It imitates the rhythm of the natural breathing, with the addition that the body is turned from back to front, and *vice versa*. The method has the great advan-

tage of being always ready. The operator sees the danger at once, and he, the anæsthetizer, is also the resuscitator. Chloroform is an agreeable but treacherous anæsthetic. The late Prof. A. v. Gräfe, who was a nervous man, was so anxious in chloroformization that he never had a full anæsthesia.

Local anæsthesia, with infiltration of Schleich's method, is convenient for many cases.

E. J. Barker gives a solution for infiltration:

℞ Pure chloride of sodium	0.8	grm.
Beta cocain	0.2	"
Adrenalin chlorid	0.001	"
Distilled water	100.	"

The very important chapter, **Sterilization, Antisepsis, and Asepsis,** presents minute advice at considerable length, as it deserves. Under the head "**Disinfection,**" Haab describes also his method of **introducing little pencils of iodoform** into the anterior chamber. This has not found sufficient approval to endorse it, as far as the reviewer can judge. Then follow the necessary instruments and apparatus.

Operations on the Eye. Operations on the Globe. Operations for Cataract. This chapter (greatest question in ophthalmic surgery) is presented with particular care. The senile cataract is a normal process, the involution of the lens in old age. If the reviewer considers his own material as to the development and percentage of cataract, he should roughly say that at the ***sixth decade 33%*** of the people show beginning of cataract, mostly at the periphery and covered by the iris, so that the patient is not aware of it, and his sight is not materially impaired. In a smaller percentage the star-substance shows first. It serves no purpose if the oculist tells the patient that he has a beginning cataract.

In the ***seventh decade 66%*** have cataract, and sight is so that in moderate light they are not much annoyed. These persons are mostly capable of performing their work without much trouble.

As to the ***eighth decade,*** I have rarely examined an octogenarian that had not more or less cataract.[1]

[1] The reviewer is not in the habit of telling the people that they have a cataract, unless they feel difficulties. In a conversation with Prof. Helmholtz and a young oculist, like myself, he said to me: "If the patient from whom you have concealed his cataract, let another oculist examine him and tell him the truth, would that not damage your reputation?" I replied: "A reputation which is damaged for this concealment is not worth the having." Another test case of the same kind was the following: A wealthy man of sixty-five consulted me.

Preliminary Conditions of Operating on the Different Kinds of Cataract: Juvenile and senile, maturity of cataract, ripening of immature cataract, pricking or incising the capsule, massage of the anterior capsule (Förster), then the different kinds of cataract: Cataracta nigra, Morgagnian cataract, sclerosed nucleus (with milky cortex, and others with transparent cortex), the ripening through irrigating, of McKeon, Lippincott, and others. The author is no enthusiast of the ripening scheme. Preliminary iridectomy is unquestionably most desirable. At page 102 the description of the different cataracts begins. The tests for ripeness, and abnormities in the eye and constitution (complications).

The Operation for the Removal of Total Juvenile Cataract. It may be operated on when the child is a year old; do not let it be over two years. The method of opening the anterior capsule with a Bowman's stop-needle is, in the reviewer's mind, not the best procedure. This needle ought not to be spoken of except historically. It is sharp only on its peripheric half. The reviewer saw it used in the old Moorfields hospital by the best operators, Bowman and Geo. Critchett, forty-five years ago, and the little needle became very popular all over Europe. The abrupt thickening of the shaft prevents the needle from penetrating into the depth. At that time they used no focal light in operating. The window in the small operating room gave a doubtful light, so that the instrument was moved in all directions; the "stop-needle was safe." The reviewer operates those cataracts with a well proportioned knife-needle. The introduction is about 3*mm* from the corneal limbus on the temporal side, which is pushed straight forward nasally, then the cutting edge is perpendicular to the anterior surface of the lens, then the point is introduced into the anterior cortex at the nasal edge of

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I saw a beginning cataract, which I entered into my case-book, but told him his eyes were not so sharp as in youth, but there was nothing unusual in them. I gave him the proper glasses, and the man always, when he saw me, thanked me for the glasses. Five years later he came to me again, quite downcast, telling me that he had consulted Dr. N. and he had told him that he had a cataract in both eyes. I asked him to come to my office, I would examine his eyes and consult my case-book. He came and read: "Cataract on both sides." I told him I had concealed the fact from him, because he would have been depressed, and I said to him, if he had come to me now, I would not have told it to him, because he could live five years longer without his cataracts annoying him. He was consoled and died at eighty. His cataract had darkened so little that he did not speak of an operation.

the dilated pupil, then it is drawn horizontally, so as to split the capsule as far as the temporal edge of the pupil. Now the knife-needle is rotated 90°, with the back up or downward, to split the capsule from above down to the horizontal opening; after this the needle is rotated 180° until the point is arrived at the lower part of the pupil; the point penetrates the lower capsule and splits it from the edge of the pupil to the horizontal incision. In this way a large central opening in the capsule is obtained, without interference with the capsule. It is exactly the same procedure as with the capsule of the secondary cataract. The reaction is trifling in the great majority of cases. When the cataract has been absorbed, the same procedure has to be repeated for the after-cataract, *i. e.* the two capsules, which are mostly somewhat thickened by small deposits and wrinkling. This operation is delicate, but safe and efficient.

Operations for Soft Cataract in Adults. If they are unripe, let them ripen, and if it remain too long, ripen it with a needle. The operation then following is the "simple linear extraction."

Operation for Traumatic Cataract varies according to the condition.

Lamellar Cataracts are so different that a general rule can not be given. From the "arcus senilis lentis" (which is a variety of lamellar cataract) "until the lamellar cataracta duplex or even triplex," the interference of sight is so little that many of them require no operation; if, however, the sight is insufficient, **iridectomy** or **suppression (removal)** of the cataract has to be decided on, and, therefore, the acuteness of vision determines the method.

Operation for Senile Cataract. Historical remarks, and description of the preparation of the patients; and the description of the instruments are well considered by the author and the editor. Positions of the hands and the patients are given in life-size chromos; the one opposite p. 140, where the iris is stroked out of the angle of the cornea, in combined extraction, is instructive and very well presented. To do this is an important precaution in extraction with iridectomy. Among the varieties of method, the removal of the centre of the anterior capsule with a capsule-forceps receives more patronage, particularly in combined extraction. The absence of the anterior capsule in the area of the pupil is very favorable. In the last years the removal

of the lens with the capsule is pressed on the European and American eye-surgeon, by Major Wm. Smith, of Jullundur, Punjab, India. His publications contain very strong arguments. His paper on the subject (see p. 137 of this issue of the ARCHIVES OF OPHTHALMOLOGY) cannot fail to draw strongly the attention to this important operation. Major Smith describes his method and backs it with more numerous and far more successful operations than any other eye-surgeon has made public. The reviewer is more and more prepared to give this method a trial. In former times he has operated a number according to this method, which in modern times was patronized by A. and H. Pagenstecher at Wiesbaden, but he has not found that it was safe to adopt it as a general operation, but, as the Pagenstechers did, restricted it to hypermature cataracts. Lately, however, he has extracted a cataract, in a man of about thirty-five, in the capsule, through a downward section, and without iridectomy and without prolapse of vitreous. It was a perfect success, healing with round, clear pupil; S. perfect; healing process free from reaction. Of all the shortcomings in the technique of extraction, it is seen when the lens presses into the opening without getting an exit. Force bruises the edges of the wound; the cortical remnants, which have remained in the wound as a foreign body, inflame the cornea in intensity and kind—moderate congestion, fibrinous swelling, or purulent infiltration; the bruised edges give a good pabulum to the pus microbes. The remedy is not to squeeze the lens through, but dilate the section on one or both corners. H. Pagenstecher recommends von Hoffmann's ichthyol dressing. Pure ichthyol is spread on a piece of gauze, saturated with liquid paraffin, and laid on the eye. Both eyes are covered with cotton and protected by a shield. From the second to the fourth day the eye is covered in that way during the night; in the daytime the covering is removed.

It is not advisable to discharge a patient before sixteen days after the extraction.

Detachment of the choroid by serous exudation is not rare, and disappears spontaneously.

Operation for Secondary Cataract. This chapter is well presented, but as the operation has been so often described in the last fifteen years, reviewing it may be omitted. To appreciate these delicate operations, study of the original article and clinical observations by expert operators is needful. Many

operators think that these secondary operations are more risky than the primary. This is entirely against my experience, and I have made several thousand of these operations. A loss by this operation is the rarest accident, and in computing the gain in visual acuteness, it was more than the gain through the extraction by the same number of primary operations.

Senile Cataract by Couching and Depression. These operations have been dead for many years; let us not revive them!

The Operative Treatment of Dislocations of the Lens. If they are still held by parts of their suspensory ligament lying in the vitreous and produce no annoyance, leave them alone; if annoying the eyeball, we may be obliged to try to get them out. Sometimes the reviewer, by alternate pressure on the sclerotic, has got out lenses floating in the vitreous, through a large corneal section, without any unpleasant reaction. If they irritate the eye; iridocyclitis; with loss of sight, the best is to enucleate the globe.

Operation for Secondary Cataract with Knapp's Knife-Needle Introduced through the Sclera (from behind). Da Gama Pinto and other pupils of the older Vienna School, and several operators who have practised this rather inconvenient measure, which has no advantage over the introduction through the cornea, and lacks preciseness, have all abandoned it; the last to embrace and the quickest to abandon it was DE LAPERSONNE, the eminent Professor of Ophthalmology in the Medical Faculty of the University of Paris.

Removal of the Lens in High Myopia. It was pointed out by Beer, in 1817, and by Mauthner in 1876, as well as by others, that a very high grade of myopia can be improved by removing the lens. The operation for myopia was first performed by ADOLPH WEBER in 1858, but was not adopted by the operators of his time. FUKALA returned to the method and wrote about it in 1889. He was followed soon by VACHER in France. The operation then was taken up with—perhaps too great—enthusiasm. Grave dangers are inherent in this operation. To meddle with the vitreous in a highly myopic eye predisposes to hemorrhage, detachment of the retina, recently or even years later. Glaucoma has often occurred by slight inaccuracies of technique.

The man that operates on a myopia less than 15 D. brings the method into ill-repute. The patient exchanges his strong concave

glass for a convex glass of equal strength, and loses its good near vision without spectacles of which he was so proud. After the operation he has to wear a heavy cataract lens of 8 D. or more for near work. The reviewer, in harmony with the views of the author, has copied the previous pages almost word for word.

In children discission and absorption alone should be done. The final discission, that of the posterior capsule, should be omitted, or at least not be done sooner than six months after the preceding operation, and after the eye has had complete rest and is free from irritation. Scrupulous care, even for the first discission of the anterior capsule, is indispensable to avoid laceration of the zonule. Such eyes have naturally weakened zonules, easily injured by the first opening of the capsule. The cataract swells, the tension is increased, a second puncture is required, vitreous escapes again, with but a little lens substance, and the condition ends in glaucoma, with which the surgeon will have to contend for months without satisfaction. It is advisable to operate on one eye alone.

Iridectomy. This chapter is very practical. The elementary part, and the description of the **optical** and **curative** iridectomy are well presented. The first part is elementary, for the tyro ; the more difficult part, that of acute or chronic disease, enters into a good deal of important surgical detail and the well-digested practical experience of the ophthalmological expert. The first part need not here be mentioned ; the second part suggests and recommends a number of technicalities worthy of repeating to the tried eye-surgeon. The technique of the glaucoma, iridectomy, and also its indications and the treatment of the prodromic stage, are clearly brought forward. The author says : Preliminary local anæsthesia with cocaine and adrenalin is most important. The editor says—rightly in the reviewer's opinion : general anæsthesia is preferable, when not contra-indicated by physical conditions. It is also necessary to instil eserin into the healthy eye, to prevent the outbreak of glaucoma in it. The editor says eserin should be used also on the unoperated eye during the convalescence from the iridectomy. Both eyes should be bandaged until the iridectomy wound has healed and the anterior chamber is restored. The operation is delicate, the technique and vigilance of the operator must be perfect and uninterrupted. The author favors the keratome more than the small knife, its sections close more readily and more even than

those of the Graefe knife. The reviewer and some operators in this country put a drop of atropine on the eye immediately after the iridectomy, which can be unhesitatingly done, and it is indicated when some blood is in the anterior chamber; as long as the wound is not yet closed the atropine does not counteract the recovery. It prevents the fine adhesions which occur readily by the agglutination of the iris to the lens.

The introduction of the keratome is important. The instrument should not be introduced too deep. It should be entered 2–3*mm* behind the limbus, and advanced so that the point and blade almost skim the iris, guarding most carefully against wounding the iris and still more the lens capsule. In acute glaucomas, especially when the pupil is dilated through atropine by the family physician, which still occurs on both shores of the Atlantic, when we are on our guard not to injure iris or lens, we easily push the keratome forward between the lamellæ of the cornea. The adept soon finds this out and steers his ship so that he avoids both Scylla and Charybdis. So long as the blade of the keratome is within the corneal tissue it is lack-lustre; when it is slightly drawn back, pushed forward and a trifle lower, the surgeon sees the bright lustre of the point and pushes the point farther on until it is before the centre of the anterior capsule. To avoid that aberration, the point of the keratome has to be constantly watched, avoiding injury to the iris and lens in advancing, and on withdrawing the knife to avoid grating Descemet's membrane.

When there is **no space between iris and cornea** the method of GAYET and SCHÖLER is available. A small Graefe knife, or, perhaps better, a very sharp scalpel, or a scarifier, is passed, perpendicular to the meridian, repeatedly over the cornea until a drop of water shows that the anterior chamber has been penetrated. The small opening is dilated with a blunt-pointed, delicate, slightly curved (as a canaliculus) knife, or with scissors, the end pieces narrow, but with very well cutting edges—recommendable are the Stevens squint-scissors, made by George Tiemann & Co., at New York. The remainder of the operation presents nothing particular.[1]

The late Dr. de Wecker recommended, under the name of sclerotomy, a simple incision at the corneal border, without iridectomy. This expectation as a curative agent of glaucoma has

[1] The reviewer saw such an operation by Dr. MARC DUFOUR, at Lausanne, which was without accident, and successful.

not been verified in recent cases. It cannot be denied, however, that sclerotomy acts well in the later stages of glaucoma and in children, and it is possible, therefore, that part of the effect of an iridectomy is to be attributed to the increased seepage (filtration).

Sclerotomy. Anterior sclerotomy is not so effective as iridectomy, but it can be repeated as often as desirable. In infantile glaucoma, in advanced and hemorrhagic glaucoma, I believe, from my experience, that it is preferable to iridectomy, to which it is often a useful accessory or complemental operation, for in many cases of glaucoma which present themselves late for treatment iridectomy fails to effect a permanent cure, and sooner or later a secondary operation becomes necessary. In iridocyclitis with deposits and increased tension, sclerotomy is the proper operation, and iridectomy would be altogether out of place. In keratoconus, repeated sclerotomy is indicated—to arrest the progress of the disease.

Sclerotomy may be performed either with the keratome or with the cataract knife ; the latter is not prone to produce iris prolapse. After the entrance and exit wounds have been enlarged to about 3*mm*, a broad bridge of sclera is allowed to stand. The incision must not be so large as to produce a prolapse of the iris, causing a distortion of the pupil. To make the incision correct, it is necessary to apply the fixing-forceps midway between the points of entrance and exit. Illustrated by Plate 7, a chromo.

A second sclerotomy after the first enhances the effect. Preparatory treatment with myotics is also necessary for sclerotomy, to guard against prolapse of the iris into the wound.

Posterior Sclerotomy. A short incision is made in the sclera with a Gräfe-knife in the equatorial region and at the same time incising the vitreous to a considerable depth. The patient looks toward the nose, the conjunctiva is seized with the fixing forceps near the horizontal meridian and drawn slightly down. The Gräfe-knife, its back turned toward the cornea, punctures the sclera 5*mm* behind the cornea, slightly below the horizontal meridian, about 10*mm* toward the centre. On retiring, the knife is slightly turned on its axis, to make the wound gape and let some fluid out.

In cases of retention of the lens in the anterior chamber more than two weeks, Adolf Weber makes a posterior sclerotomy, and lets out vitreous through the scleral wound, gaping by ¼ turning of the knife, by pressing on the eyeball from above and in front

down and back, to induce the lens to retreat into its normal place. This is to prevent the development of malignant glaucoma.

All these operations, as the reader will see, are very well and clearly described, but there is one capital omission : the value of the operations—*i.e.*, statistics, with success and failure, for many of these operations appear quite unreliable. The reviewer should have liked to learn, for instance, the benefit the patients received from the posterior sclerotomy and the like.

The second half of the book comprises the operations on the **Cornea, Sclera, and Conjunctiva.** As they are not so important, we may go lightly over them.

The first chapter (IV.) treats of the **removal of foreign bodies** (1) those on the tissues ; (2) the operation of puncturing the cornea, paracentesis of deep corneal ulcers; (3) the operation for pterygium ; (4) covering defects with conjunctiva ; (5) tattooing of cornea ; (6) removal of dermoids ; (7) staphyloma of cornea.

(V.) **Operations in the Anterior Chamber.** (1) Separation of ant. synechiæ ; (2) of post. synechiæ.

(VI.) **Removal of Foreign Bodies from the Interior of the Eye.** (*a*) **Spicules of iron (magnet operation).** This important chapter is fully presented; the author's researches in this department are most ingenious and meritorious (the well-known Haab's giant-magnet).

(*b*) **Removal from the Interior of the Eye of Foreign Bodies not of Iron.**

Operations outside the Eye.

Ocular Muscles. Strabismus : (1) Tenotomy of Gräfe; (2) of Arlt ; (3) of Snellen.

Operations on the Antagonist of the Squinting Muscle. (1) Knapp's method ; (2) Weber's ; (3) de Wecker's ; (4) Landolt's advancement ; (5) Prince's method ; (6) Verhoeff's operation ; (7) Worth's; (8) Wecker's ; capsular advancement, Todd's, Brand's, Schweigger's, Koster's, L. Müller's, Verhoeff's lengthening a tendon. These operations are all sufficiently described to perform them.

Enucleation of the Globe is well and extensively described; then follow resection of the optic nerve, which formerly was removed as a preventive of sympathetic ophthalmia ; exenteration or evisceration of the globe ; artificial glass eyes ; removal of

orbital tumors; Kroenlein's operation to get access to the depth of the orbit by an osteoplastic resection of the temporal wall.

Operations on the Lids and in the Conjunctival Sac. Then follows the description of the operations for ptosis, then those for entropion, further blepharoplasties, and last the operations on the lachrymal organs.

To sum up, we say that Haab's *Hand-Atlas of Operative Ophthalmology* is a work well-conceived, carefully written, faithfully and attractively edited in English. The enterprise of the publishers has received a new token of their keen and lucky sense of selection, the reward of which is self-evident.

H. K.

II.—The Ophthalmoscope and How to Use it. With seventy-three illustrations—twelve colored plates. By JAMES THORINGTON, A.M., M.D., Professor of Diseases of the Eye in Philadelphia Polyclinic and College of Graduates of Medicine. P. Blakiston's Son & Co., 1012 Walnut St., Phila., 1906. Price $2.50.

This octavo of 298 pages is very well gotten up; paper, print, and illustrations are as good as anybody could wish. The contents deserves a fine garb.

Chapter I. begins with the choice of the ophthalmoscope. It is not genteel to introduce the invention of the ophthalmoscope with the words: "The original ophthalmoscope of Helmholtz (1851) is a crude affair and is now a museum-curiosity," as the ophthalmoscope of the present day excels the Helmholtz instrument in every particular, but for the general student the modified instrument of Loring appears to meet with most favor in America, and the Morton, an excellent instrument, is quite popular abroad. The reviewer differs from the author and considers neither of these instruments the best for the beginner: the Morton is a very good instrument, but unnecessarily complicated, and the popular Loring could also be simpler. The swinging mirror is intended to avoid astigmatic aberration. This is in all cases insignificant. Helmholtz gives in his first publication on the ophthalmoscope the following rule: The line from the right to the ophthalmoscope, and the line from the ophthalmoscope to the patient's eye, should coincide as near to each other as possible. If we follow this rule, the effect of the obliquity, even in strong glasses, is neglectable; but as I see so often in my clinic young oculists seat the patients more or less sideways and them-

selves right near the patient's eye, the light line from the burner to the ophthalmoscope will strike the correcting lens behind the sight-hole in the mirror very obliquely, much more than the small angle of the swinging mirror.

In my student days I learned, in the old Moorfields hospital, a great advantage in using the ophthalmoscope from the late surgeon and oculist, Mr. HULKE, a very clever man. He never sat in using the ophthalmoscope; he and the patient were standing before the lamp. I asked him why he did not sit. He said, "I save time." Saving time is not the only gain, but the position before the lamp fulfilled the rule of Helmholtz, that the little lens behind the hole in the mirror deviated so little from being at right-angles to the light-line that there was no astigmatic action. At the time when the swinging mirror was invented, I made experiments with a Loring ophthalmoscope and a simple spherical mirror, to see how the astigmatism differed: it was practically the same. Since that time, more than 25 years, I have been in the habit of examining my patients standing. This has saved me a great amount of valuable time. It is also more convenient. In the erect image, I am much nearer to the patient's eye, and I can stand 1′–2′ before the light. I want to express my opinion that the popular, and therefore very cheap, Loring ophthalmoscope can be simplified, and I contend that the swinging mirror may be dispensed with, and, for the beginner surely, also the turning quadrant with a certain number of auxiliary lenses. I have asked many oculists whether they had used this quadrant. The answer always was negative.

Against the Morton ophthalmoscope I have nothing to say, except its complication. With the rule of Helmholtz on the arrangement above mentioned, I can say that a concave mirror and a rotating disk with 2 dozen auxiliary lenses have always been sufficient for me. The author describes the ophthalmoscope room, and the use of the mirror to discover all that can be found behind the pupil. He has constructed also an artificial eye for technical drill, and to find all that the physician must know. The use of mydriatics. He recommends a fresh 4 % solution of cocaine, which dulls the cornea and therefore also the fundus. On the next page he says: a 2 % solution of *euthalamin* may be used in preference to cocaine [in the next edition he should remind the proofreader that this solution is euphthalmine].

I find by the ophthalmologists who visit my clinic that the

indirect method is neglected in America, in favor of the direct method. That should not be; we obtain a general survey easier and better with the indirect method—inverted image. We want both. The indirect method orients us very quickly; we find what is wrong, and then we magnify it either by the direct method—erect image,—which magnifies about 16 diameters, whereas the indirect with an auxiliary glass of 2″–2.5″ focus gives only 4–5 diameters. We can, however, magnify the inverted image by using weaker lenses before the eye (4″ focus) and a stronger lens (4″ focus) in the rotating disk. The low magnification has a great advantage in furnishing a much larger ophthalmoscopic field. For we may measure abnormities in comparing them with an object of known dimensions of the optic disk.

About two weeks ago I had, by the courtesy of one of my professional friends, the rare opportunity to diagnose a cysticercus—the first I had ever seen in America, *i. e.* in 38 years, among 90,465 private, and 306,133 clinical patients. With the ordinary arrangement of a + 3″ objective lens, a distinct and transparent cyst was seen in the macular region and encroaching over about one-third of the papilla. With + 1/2″ (20 D.) the cyst and the od could be seen together, very much smaller, but I had the advantage that I had a compact picture. My friend saw the same and also made the same diagnosis, though he had never seen such a parasite in the eye.

Focal or Oblique Illumination is a very important method of diagnosing ocular disease. It was also invented by Helmholtz. The rule with this is: to illuminate only the part we want to see; all that is before and behind must be kept dark, *i.e.* we must direct the point of the cone of light strictly to the point which we want to recognize. This must be learned, and the expert finds with this simple method the faintest opacities of the cornea, on the external surface, interstitial linear, patchy, disk-shaped opacities; the finest dots on the posterior surface of the cornea; the depth and the clearness of the anterior chamber; also the many diseases of the iris—the simple synechiæ, the specific gummous swelling round the minor zone of the iris, or the peripheric tuberculous nodules, also sarcomatous swelling growing from the ciliary body into the angle of the anterior chamber; further the lens and even into the vitreous chamber.

Chapter II. gives an elementary but thorough description of the essentials of ocular optics, viz., with many very good cuts: general principles of light; reflection; refraction; plain, spheric, convex, concave mirrors; prisms; the different kinds of lenses; conjugate foci; the numeration and variety of lenses; cylindric

lenses. Estimation of the refraction of an eye with the direct method, and retinoscopy; the latter is only sketched, the author having described it in two very commendable monographs: (1) Retinoscopy, (2) Refraction and How to Refract.[1]

Chapter III. **Anatomy and Anomaly of the Eye: sclera, cornea, iris, ciliary body, and choroid.**—The description is elementary, very clear, pointing out what is important for science and practice. Many cuts illustrate the anomalies and diseases; the varieties in the membrana pupillaris (Wicherkiewicz); the various forms of opacity of the lens, and the subluxation of the crystalline body; lamellar cataract, lenticonus.

Chapter IV. **The Normal Eye-ground.**—The optic nerve disk (od) is illustrated by its surface above the section of the optic nerve and vicinity, the well-known picture, the description and figure from Fuchs. The first of the seven colored figures of the eye-ground, all excellently well painted by Miss Margaretha Washington, of Philadelphia, represents the healthy background.

Chapter V. describes the changes of the different coats and the fluids of the eye, and the crystalline lens. An extract is not available here. We want to point out that on page 138 there is the parallactic determination of fixed opacities from the centre of the cornea to the posterior pole of the lens, ½–1*mm* in front of the average position of the centre of the anterior surface of the cornea. The author need not have borrowed from Jennings, for it has been known for a long time, having been first described by Listing.

Chapter VI. deals with visual acuteness, visual field, and perimetry; scotomas, especially the paramount central scotoma.

Chapter VII. The retinal vessels, hemorrhages, hyperæmia, anæmia, embolism, thrombosis, and pigment changes. This is a very important subject not only for the oculist but for the general practitioner. The changes in the arteries are fundamental: to mention only one point, the symptom headache, which can be in the greatest numbers of sufferers brought home to its cause through ophthalmoscopic examination. In young people it mostly is caused by hyperopia and astigmatism; in persons over middle

[1] All America and all England should protest against this utterly wrong Philadelphia slang, however convenient it be. It is not much longer to say, "examine her refraction," instead of, "refract her." More than ten years ago, no lesser author than Weir Mitchell sent me a lady patient with a letter in which he wrote, "I glassed her also," but to no purpose.

age it is due to endarteritis, which we can diagnosticate by the thinness of the arterial current, the thickening of the vessel walls, the thin calibre of the visible current. The next sequel of the insufficient vis-a-tergo in the arteries is thickening of the venous current, and its consequences. This is the more important because the adept can recognize these conditions in the early stage, when it can be cured, or at least tolerated.

The second colored plate depicts embolism of the central artery and periarteritis.

A typical picture is Plate III., Thrombosis of the Central Vein, so-called Hemorrhagic Retinitis.

Chapter VIII. **Diseases of the Retina.**—The description gives more than the ophthalmoscopic conditions, but also the etiology, and the course of the disease; further, the prognosis and treatment. The changes in the retina are: (1) opacities, (2) œdema, (3) exudations, (4) hemorrhages, (5) pigment, (6) vascularity, (7) detachment, and (8) atrophy. Plate IV. gives a good picture of albuminuric retinitis. A still more instructive picture is on Plate V., *Albuminuric Retinitis of Pregnancy.* Such plates should be observed and deposited in one's memory centre, by words of tongue and pen and imitation with colored crayons. Another fine picture is Plate VI., *Retinitis Diabetica.* Plate VII., *Retinitis Pigmentosa*, is a well elaborated picture, though not the ordinary type. The type is choroidal: the od and the retinal vessels are normal instead of thinned. The even ring of ordinary homogeneous red is not typical, the white ring surrounded is not frequent. **Treatment.** "That for diabetes." There is none at all, unless there is a cause which can be removed.

Detachment of the Retina. Plate VIII. is not representative either, but very instructive: The white, apparently somewhat raised od; the arteries are small, the veins large; two are white streaks accompanied by (hemorrhagic) black pigment, and in the lower part under crooked vessels five white curved elevations.

Rupture of the Retina is rare, excepting in orbicularis with detachment.

Commotio Retinæ is not very rare. It is traumatic, mostly by blunt force, not rarely at the other side from where the blow was inflicted. Those with contrecoup show laceration. They are well defined, whitish, not rarely hemorrhagic, small and larger patches. In a few days, under bed-rest, the contusion has disappeared.

Glioma of the Retina (Beer's amaurotic cat's eye) is an infantile cancer, about the worst of all cancers. Glioma is the only neoplasm which occurs in the retina (Fuchs). Pseudo-glioma, purulent irido-choroiditis, metastatic from cerebro-spinal meningitis, puerperal fever, even artificial abortion. [The reviewer has had to treat a lady who, by the fourth artificial abortus, contracted a metastatic choroiditis. She lost both eyes. She was well bred, wealthy, had her mother and her husband whom she loved. It was mania. When she had both her eyes removed she became pregnant again, got a child of which she was very fond.]

FUCHS described, under the name of retinitis circinata, a picture not very rare, mostly a change into white, small patches in curved lines in the upper and lower limits of the macular region, which develop from retinal hemorrhages (thrombosis).

WARREN TAY,[1] of London, published, the first, a peculiar gray degeneration around a dark brown patch in the centre of the macula lutea of small children. Dr. B. SACHS, of New York, examined the general health of the reviewer's first case and other such children. He found that they all died early and were very weak, bodily and mentally. He published the disease under the name of **amaurotic family idiocy,** under which it is known. There are now over 150 cases of this disease on record. These children are almost all Hebrews, seven are non-Jews. See the paper by Dr. Mortimer Frank, of Chicago, published in *The Journ. Am. Med. Assoc.*, and in the *Annals of Ophthalmology*, No. 1, 1906.

Angioid streaks, dark brown, almost black lines, are like vessels, and course irregularly under the retinal vessels. They probably originate in changes of extravasations.

Chapter IX. **Diseases of the Optic Nerve.** The aspect of the optic nerve must be studied with the ophthalmoscope on the living and on good colored pictures. It should never be lost sight of that there is a considerable latitude at the normal od and the

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[1] Living specimen. April 7, 1881. *Transactions of the Ophthalmological Society of the United Kingdom*, vol. i., p. 55, with a very fine colored illustration. A few years later the reviewer drew attention to this disease, by an identical colored picture of a very young child, with its history, before the German Ophthalmological Society at Heidelberg. Nobody knew of another case, and the English member had forgotten the publication of Warren Tay. The case of the reviewer is published in the *Transactions* of the Heidelberg Society.

retina. The hyperæmia, swelling, opacity, size, the configuration of the vessels, the pallor, the physiological, glaucomatous, and atrophic depressions are of very great importance (illustrated by three text-cuts, with description). The elevation of the disk or other parts—exudation, tumors in the background—can be measured by the direct method of ophthalmoscopy: 3 dioptries indicate 1*mm* of elevation or depression in relation to the basis (the retina) of the background; for each dioptry difference of refraction between two surfaces, 0.34*mm* is to be taken into account. This method is very useful, but the doctor must be able to relax his accommodation during the examination. The deduction is easy. The reviewer had—one of the first—drawn attention to this method in his monograph on *Intraocular Tumors*, 1868 (out of print). It is nicely described in Haab's *Ophthalmoscopy*, in English by De Schweinitz, W. B. Saunders & Co., Philadelphia, p. 44, to determine irregularities in the surface of the eye-ground. The descriptions of the manifold very important anomalies and diseases are all sufficiently numerous and precise to study and treat them. Some of them may be mentioned by title: Swollen disk, stage of swelling or constriction of the circulation, effusion or cell proliferation, stage of resolution or absorption and atrophy, optic neuritis—ascending and descending, intraocular optic neuritis, vision and visual field, cause and course of papillitis, with a reproduction of 677 cases of papillitis accompanying brain tumor, by John E. Weeks, presented at the Section on Ophthalmology of the American Medical Association, Columbus, O., 1899. A colored Plate (IX.) is not typical, representing **"atrophy of the optic nerve (post-papillitic atrophy), also medullated nerve fibres."** The execution is excellent, as all the productions of Margaretha Washington are, but the selection is unfortunate: the reviewer, even by looking intently, could not make the diagnosis of the conditions designated under the picture. Plate X., **Spinal Atrophy** (Argyll-Robertson pupil). The artist, in painting the od had not thoroughly cleansed the brush with which she painted the previous picture. Both these pictures are too beautifully blue-green, though these vivid colors are seen at times.

Chapter X. **Diseases of the Choroid; Glaucoma.** Changes in Color. Inflammatory Products. Changes in Pigmentation Atrophy. Hemorrhage. Inflammation. Disseminate Choroiditis. Plate XI., good. A multitude of small gray inflammatory patches,

which gradually run their course, ending in such a degree of destruction that you thought there could not be much sight expected, but the sight is mostly surprisingly good.

In the same way a number of small ivory-like nodules are imbedded in the choroid ("Drusen" in German). Tay's choroiditis: small, white, glistening dots are called senile guttate choroiditis, and are due to colloid degeneration. They also are not so injurious as they appear. I have seen them for many years, not changing much and excessively slow in growth. The central or macular choroiditis is a senile degeneration.

Myopic Choroiditis. This is a serious condition, brought about by stretching or elongation of the eyeball. The choroiditis begins usually on the temporal side of the disk, advances toward the macula, which it may destroy and pass beyond.

Irido-choroiditis, metastatic, is an incurable disease, and ends in panophthalmitis, as we have seen before.

Isolated ruptures of the choroid are produced by blunt force They are mostly single, but also two and even three occur: small dilacerations of the choroid, concentric with the temporal margin of the od; the retina is mostly uninjured. They do not produce choroiditis, but do not unite either. The mode of this isolated rupture has produced several explanations. The reviewer, thirty-three years ago, advanced the hypothesis that it was like the mechanism of the laceration of the meninges and the fracture of the bone by contrecoup. The late Professor Arlt opposed it, but had not much support for his rather complicated theory. They never suppurate or jeopardize the other parts of the eye.

Sarcoma of the choroid is, or becomes always, pigmented. It is easily diagnosticated. Treatment: enucleation. Course: gradual metastatic invasion of the liver or other parts; and death is invariably the end. The time may be after many years. I have had patients that died fourteen years after the operation, and one lady died April 14, 1906, twenty-five years after the operation. These are exceptions, and I can say that the size of the tumor has no influence on the duration of life. I have had patients in middle life, and healthy-looking appearance, with very small melano-sarcomas, who did die in a few years.

Tuberculosis of the choroid occurs either as the disseminate (miliary) tubercles or as solitary (conglobate) tuberculosis.

Glaucoma ends the last article, with a plate of the background, of this useful book. H. K.

III.—**Subjective Sensations of Sight and Sound.** By Sir Wm. R. Gowers, M. D., F. R. C. P., F. R. S. Lectures on Disease of the Nervous System. Second Series. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St., 1904.

"These lectures have appeared in print at various times and are now republished, carefully revised, with the intention to promote such observations. The substance of the first lecture has been rewritten, and its matter rearranged in the light of later experience, which, however, has not modified its chief conclusions. There is indeed a prospect that our ultimate conceptions may be thrown into crucible, and recast by ardent thought, through the discoveries regarding radio-activity, and the possible nature of the elementary constituents of matter, without altering the coarser facts. All that has been demonstrated on atoms and molecules, and the relation of energy, latent or released, remains true."—*Extract from Preface.*

Lecture I. The Bowman Lecture, June 11, 1895.

Physiological Considerations on Subjective Visual Sensations. In 1885, Gowers put forth the opinion, now generally confirmed, that, in addition to the half-vision centre in the occipital lobe, demonstrated by Munk, the indications obtained by Ferrier are correct, and that there exists a higher visual centre in the region of the angular convolution, a centre which immediately subserves the perception of visual impressions [memory or conceptive centre], and to which impulses seem to pass from both half-vision centres in the occipital lobes, in such a way that in each higher centre both fields are represented, but that of the opposite eye in greater degree. In the strange hemianæsthesia of hysteria we have evidence of arrest of all the higher special sense centres in one hemisphere. Instead we have the "crossed amblyopia," as it is termed: peripheral vision is lost in both eyes; centre vision persists in a small area in the opposite eye, and in a larger area on the eye of the same side. No trace is found of any half-fields. But hysteria is a by-word, and all facts, however definite, with which the name can be connected are disregarded by physiologists. Yet they are definite, and must depend on equally definite fractional arrangements. Moreover, the same affection of vision occurs in organic disease.

Color Vision. Subjective visual spectra frequently present colors—red, blue, yellow, and sometimes green. The author

says that in disease the breadth of the field is as large as white. He mentions a patient of his, an epileptic, in whom the aura of the fit was uniformly a sensation of a green color over the lower half of the field of vision, from side to side. The patient said spontaneously it was "as if I were standing in a field of grass." The author gives the diagrams of the color-fields.

I. Visual Sensations in Migraine. Migraine belongs to a lower class than those of epilepsy. The attacks may soon become complex but are comparatively simple. The epileptic visual auras are extremely brief, lasting a few seconds, and are loss of consciousness, and convulsions. The migrainous sensation is deliberate, occupying ¼ to ½ h., and is followed by a headache lasting hours. In rare cases similar sensations occur as an isolated symptom, no headache.

The sensations are long, but peculiar; crude in nature—*i. e.*, low in the scale of sensory perceptions. No visions of faces occur. The sensation, simple in character, is remarkable in form; the simple elements develop in the most complex combinations, and give rise to spectra that are extremely curious, and will one day, I doubt not, be most instructive. For this instruction, much observation and comparison of facts are necessary.

The Expanding Angled Spectrum has been studied by Dr. HUBERT AIRY on himself, and published in the *Philosophic Transactions of the Royal Society for 1868.* The plates have been reproduced in Dr. Liveing's admirable treatise on Megrim.

Special Features of Migrainous Spectra—The spectra of migraine present the zig-zag or angled character which is called the "fortification spectrum," with well-known curved characters. The visual discharge of migraine is usually accompanied by a process of inhibition of function, so that the picture is of a blue and red broken line in an oval.

Radial Spectra. An area of darkness developed in the outer-lower part of the field; within it was a bright zig-zag of white light. An excentric star in black surroundings; a bright star in a dark field; a large dark area moved out of the luminous field.

These spectra may show the visual prodromi of the attacks of migraine and become the warning of the epileptic fits, in more rapid evolution.

Hemianopsia. The inhibitory loss of sight, described by the late Prof. Förster, of Breslau, under the names "amaurosis fugax" and "hemianopsia fugax," Gowers states never having

seen in these temporary hemianopsiæ with the complete half-field as in organic hemianopsia. All he could verify was a partial dimness of sight. The subject needs further careful investigation.

Central Spectra begin at the centre and expand evenly round, one-sided with Airy's fortification spectrum limiting itself by the zig-zag on one side, whereas the remainder of the periphery fades away on the other side. At times they enlarge vertically on both sides; they are black, and sharply limited. Whenever the limiting bright spectrum appeared, the headache which followed was always on the other side of the scotoma. We may thus assume that the pain was on the side of the hemisphere chiefly on the process of discharge.

Pericentral Spectra. A man (Beck) writes: "When sitting down to dinner, the zig-zags colored red and blue, suddenly appeared, surrounding the edge of the plate before me. As I looked curious, my wife said: Why do you not carve? On taking my eyes off the plate I said to them: The zig-zag rainbow colors are gone out of the window." This fact is more important than may at first sight appear, because the form of the spectrum was evidently determined by the actual stimulation of the visual centres.

II. Visual Sensations in Epilepsy. A visual sensation or visual loss is common as the immediate warning of the onset of an epileptic fit—that is, the first effect on consciousness, of the cerebral cortex. Loss of sight, observed as sudden darkness, is always bilateral. The simplest forms are: (1) a sudden appearance of light or color; (2) sparks or stars, small and often numerous; (3) sometimes a larger luminous object is seen, round, stellate, often colored, commonly circular; after a few revolutions, consciousness is lost. In one case, as consciousness began to fail, a most offensive smell was experienced, always the same, but indescribable.

Psycho-visual sensations are definite sensorial conceptions of figures of persons or faces or scenes [phantasms].

Associations. Visual sensations may be associated with subjective sensations of hearing, very seldom of smell.

I have already mentioned the remarkable fact that the sudden spontaneous activity, which we will call "discharge" of the centre, is often preceded by sudden arrest of function, by inhibition. In one case, suddenly all became dark, then there appeared a red

sight before the eyes, changing to green, then consciousness was lost and the convulsion (in an epileptic) came on.

III. Miscellaneous Sensations. Spontaneous activity of the visual centres, giving rise to a sudden light, or color, or to the impression of some seen object, sometimes occurs in abnormal cerebral states apart from epilepsy and migraine.

Vertical Hemianopia.—The blending of the visual centres in the two hemispheres is strikingly evident when subjective functional disturbance has a distribution, not from one side, but in the vertical direction, of which I have mentioned a case before, in which the aura of the epileptic fits was green in the lower half of both eyes. In the cases which the author has seen the loss has been in the lower half.

Conclusions.

Far more observations, precise and detailed, are needed to enable any definite inference to be drawn regarding the indications of the phenomena here considered. We may learn much on the action of the cerebral centres and the relation of the positive spectrum to the inhibitory darkness. Yet the question presents itself again and again.—To what part of the visual centres are these phenomena to be referred? One conclusion seems correct: they must, in most cases, depend on a functional fusion of the centres in the two hemispheres, and that the higher visual centres are the seat of the disturbance.

IV.—**The Optical Dictionary,** an optical and ophthalmological glossary of English terms, symbols, and abbreviations, together with the English equivalents of some French and German terms relating to physical, physiological, and abnormal optics, optical and other instruments of precision, and terms descriptive of color and photo-chemistry, to which are added a number of general and mathematical expressions. Edited by CHARLES HYATT-WOOLFE, F. R. P. S., editor of *The Optician and Photographic Trades Review*, etc. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1904. Price $1.

This long title-page gives the contents of the small 8vo volume of 165 pages. The print is excellent; the words to be explained are in larger heavy type; the explanations are very good. It seems to be a complete collection of the foreign and rare words. The little book will be a great help to everyone that has anything to do with optics and kindred subjects. H. K.

V.—**The Physician's Visiting List** (LINDSAY & BLAKISTON'S) **for 1906.** (Fifty-fifth year of its publication) The Dose-table herein has been revised in accordance with the new U. S. Pharmacopœia (1900). Philadelphia : P. Blakiston's Son & Co., 1012 Walnut St. Price $1.

This compendious and neat pocket-book is very well arranged, and not too bulky. There is an introduction containing incompatibilities, the metric system, table for converting apothecaries' weights and measures into grams. Dose-table, Asphyxia and Apnœa, Comparison of Thermometers, Table for Calculating the Period of Utero-Gestation. This, in our estimation, is one of the most practical *Vade-Mecums* for physicians.

H. K.

VI.—**Diseases of the Eye, a Handbook of Ophthalmic Practice for Students and Practitioners.** By G. E. DE SCHWEINITZ, A.M., M.D., Professor of Ophthalmology, Pennsylvania University, etc. Fifth edition, thoroughly revised. W. B. Saunders Comp., Philadelphia and London, 1906. Price $6.00 net.

Tnis text-book of 894 pages, with 313 illustrations and six chromo-lithographic plates, in its new edition, can be placed among the best, that may be called classical—for instance, that of Wm. Mackenzie's (of Glasgow) *Practical Treatise of the Diseases of the Eye.* It was written before the ophthalmoscopic era, but it is to-day a classical book, and if any one can obtain a copy of it he will prize it highly. Mackenzie was a well-educated man, a keen observer, a classical writer. All that could be found with the means of research at his time he detected, and described it so that the reader of to-day will be delighted to read it, particularly his perfect case-taking. He is in every oculist's memory as the discoverer of that dread disease, sympathetic ophthalmia, of which we have no fuller knowledge than he had. It probably has a new nosological principle, to the discoverer of which the Graefe medal is sure. In France, Panas; in Germany, Fuchs, occupy the same rank. The text-book of De Schweinitz is complete, for our time. He has taken pains to avoid omissions and shortcomings. The titles of the new special paragraphs fill a whole page. The last edition, of 1902, had 773 pages, 121 pages less than the present. The clear and attractive style, the superior typography and illustration, will please every reader; apart from this he will find what he seeks, and what he can

use. To go critically over this large volume need not be done now, only a few remarks in the operative part, and specially of the management of cataract, may be given. I will only premise that this chapter, like the others, is very good, and complete.

Page 806, **Accidents.** The knife may be introduced with the cutting edge turned in the wrong direction. If this "somewhat inexcusable mistake could occur," the knife must be withdrawn and properly inserted. The first oculist to publish such a mistake was very sharply criticised. The critic was a New York eye-surgeon, the perpetrator also. The latter did not excuse himself, for "the somewhat inexcusable mistake" happened him twice more. He did not publish the two later mistakes, but published the first, and also the correction. He was not dismayed, but he said to the students who watched the operation, "Look here, the cutting edge is below"; then he simply turned the Gräfe knife 180° round and finished the operation as if nothing had happened. Soon after, there came Dr. Santos Fernandez, in Habana, a very good cataract operator, to publish the same accident. He gave the advice, in such an accident, to remove the knife and postpone the operation. Since that time I have seen that the rule of Santos Fernandez, to remove the knife, has been indorsed. The perpetrator who first came out with the confession, was the reviewer. The two other accidents were treated in the same way, and all three had no reaction whatever and the patients had good sight. Our author is more lenient with the reviewer. Every avoidable blunder is more or less inexcusable, but to most of us poor mortals that see a great deal, everything is liable to occur. My first accuser had not a great opportunity to turn the cataract knife topsy-turvy. I hope that this communication will have the effect, not to withdraw the knife but to turn it. To withdraw the knife, and immediately to properly insert it, the reviewer would like to know whether the anterior chamber remains filled, and how accurate the section may be made?

Page 811 the author mentions **spongy or gelatinous exudate**. This is a fibrinous exudate and occurs by traumatism, in syphilis, and metastatic gonorrhoic irido-choroiditis. It is without danger, and may be diagnosed by the mildness of the inflammatory irritation. There is a fibrinous exudation, at times a streak of discharge on the gauze when the first dressing is taken off. If there is no pain, and the edge of the upper lid is not red and swollen, even when the edges of the section are somewhat infiltrated, it is not necessary to disinfect vigorously.

Page 11. **Herpes corneae, filamentous keratitis,** is rare, and not dangerous. Light treatment. **Prolapse of iris**: In simple extraction to inspect the wound the day after the operation, and when it is present, to excise it cleanly; if it has

been present more than 1 or 2 days, the abscission is apt to engender a traumatic iritis; better to leave it, and when they are large to cut them off, like an old staphyloma. To avoid it I always, in the first night, let a trusty nurse watch at the bed so that the patient be quiet. Now to **prevent the prolapse**: 1st lay the corneal section not so far backward, but nearer to the limbus corneæ than to the sclera. Small excisions or even small peripheral incisions prevent prolapse considerably (Chandler in Boston, the late Schweigger and Pflüger in Europe). It is not so essential to spare the iris: small excision is a positive prevention and has no unpleasant consequence. Large iridectomies are not desirable, and if they are downward, they are a nuisance.

A good deal might be discussed on the treatment of the after-cataract. Yet this is well described.

The book has an excellent index of 52 double columns, an immense help to use the work as a reference book.

H. K.

VII.—**Biographic Clinics,** Vol. III. Essays Concerning the Influence of Visual Function, Pathologic and Physiologic, upon the Health of Patients. By George M. Gould, M.D., Editor of *American Medicine*, etc. Philadelphia: P. Blakiston's Son & Co., 1905. Price $1.

In the Introduction the author says that the examination of 7166 school-children in New York City in 1905 showed that 1273, or more than 17 %, were suffering from defective eyesight of the worst or most evident kind: bad nutrition, nervous disease; cardiac, pulmonary, skin diseases; deformity of the spine, the chest; bad mentality: total cases requiring medical attention, 3132.

Then the number and kind of anomalous refraction and their prejudicial influence on the health of the whole body, and special organs, are discussed.

The next chapter treats on the "New Ophthalmology"; and its Relation to General Medicine, Biology, and Sociology is considered under the influence of Eye-strain. The effects manifest themselves mostly in depression and other affections of the nervous system. Errors of Refraction and Motility are raised by the author so high that it deserves the name of "The New Ophthalmology." This symptom of the errors of refraction is certainly very important, but there are other diseases of the eyes no less important—for instance, cataract, the conjunctivitides: blennorrhœa

and trachoma, etc.; further, the eye-ground diseases, for instance arteriosclerosis, which can be so well diagnosticated with the eye mirror. This condition alone makes more people wretched than all the errors of refraction. It has some symptoms in common with errors of refraction—for instance, indigestion, headache (migraine), asthenopia, and other distempers. These patients are not all hyperopic or astigmatic; their remedy is: diet and exercise. The new or modern ophthalmology is the progress in all branches of ophthalmology, in which the Americans have their share.

Dr. Gould's third volume, like the two others, will be read with pleasure and profit, for his style is attractive and persuasive, in which positiveness is a prominent feature, all of which are captivating qualities. H. K.

VIII.—**The World's Anatomists.** By G. W. H. Kemper, M.D. P. Blakiston's Son & Co., Philadelphia, Pa. Price, 50 cents.

This little 12mo, of seventy-nine pages, of the Professor of the History of Medicine in the Medical College of Indiana, Indianapolis, Ind., is very interesting. It gives sketches of the work of all the prominent anatomists, whose names are found in our text-books of anatomy and physiology. It is interesting to learn the lives of the men that have laid the foundation of medical science and practice. The print of the booklet is clear, embellished with eleven illustrations, nine of which are portraits. The low price is surely an inducement for almost any physician to buy it, especially the Americans, who study anatomy with great zeal. H. K.

IX.—**The Ophthalmic Year-Book for 1904.** By EDWARD JACKSON, Denver, Col., and GEO. E. DE SCHWEINITZ, Philadelphia, Pa. Illustrated. The Herrick Book and Stationery Co., Denver, Col., 1904. Price, $2.

A very well-gotten-up book of 250 pages of text and 68 of index. Issued in May, 1905. The illustrations are few but good.

Dr. JACKSON contributed the first part: Eye-strain, Refraction, Motility, Retina, Optic Nerve, Tracts, and Centres, Lens, Vitreous, Tears, Lids, Orbit and Adjoining Sinuses, General Ophthalmology.

Dr. DE SCHWEINITZ: Conjunctiva, Cornea, Sclera, Pupil, Uveal Tract, Toxic Amblyopias, Glaucoma, Tumors, Injuries, Sympathetic Diseases, Operations.

This digest of ophthalmological literature is arranged according to subjects, "Sammel-Berichte," which is a great advantage for general information, if the time of issue is not important for the reader. The well-written and very valuable book will be read by every English-speaking ophthalmologist with pleasure and profit, as could be expected from the names of the eminent authors. We can select only a limited number of specimens to show the high character of the work.

The first article is *Eye-strain*, according to a symposium held in the New York Academy of Medicine last year. Dana distinguishes two kinds of eye-strain: (1) the automatic effort of the mid-brain and oculomotor nerves, which does not generally involve conscious mental effort; (2) a distinctive and fatiguing effort is made to supplement the mechanism of the eye, and the sensation of which may cause distress. He dismisses the first as of little importance; the other, the real eye-strain, is a kind of tension, or brain-strain.

DE SCHWEINITZ contributes a very fine *ophthalmoscopic chromo* (frontispiece) in a woman, sixty-six years old, with chronic heart disease and arteriosclerosis. V=$\frac{6}{6}$, gradually, in nine months, $\frac{4}{60}$. A year later the other eye began to suffer in the same way. Such ophthalmoscopic pictures have been published by Haab and a few others under the name of round, hole-like defect in the macula of the retina, of traumatic origin. De Schweinitz's case followed iritis.

The reviewer has seen several cases of that kind; they were the result of degenerative choroiditis; the most characteristic case, which was under his care for two years, was probably produced by excessive use of her eyes. The patient, of twenty-nine years, was a teacher of a high-school for young ladies, somewhat frail and anæmic, but very ambitious. Among other branches she taught Sanscrit, which she greatly liked. The ultimate condition was a round perforation, with inability to read with that eye. I restricted her in her work; for six weeks no use of her eyes; then she was allowed to teach again, but with utmost caution. In a year, when she had used her eyes again without letting me know, she came again. The other eye showed a degeneration in the fovea; fine atrophic dots, just as the other eye had begun. I told her she should give up her position now, not wait until this eye had reached the condition of the other. She did it, and for a year she never tried her eyes for fine seeing. The disease did not progress. She married afterward, and showed me her eyes again from time to time. The disease had been arrested.

The next subject is **Refraction,** beginning with the Skiakinescopy of Dr. HOLTH. *Cycloplegia*, by DE BECK ; *Myopia ; Light Sense ;* **Myopia** and **Glaucoma.** *Full Correction*, CLARK. *Operative Treatment.* **Astigmia. Accommodation** (nothing particularly new or important). **Ocular Movements.** Systematic examination. Binocular vision. Paralytic squint. Recurring oculomotor paralysis. Ophthalmoplegia external (illustration). Bielschowsky's case of *paralysis of the right inferior oblique.* The **conjunctival diseases** receive a careful consideration (DE SCHW.), both in etiology and treatment. In **conjunctivitis gonorrh,,** especially in neonati, the stronger remedies gradually yield to the weaker solutions, argyrol, etc. In trachoma, copral, a copper-nucleid, is indorsed in a 5 % solution, or in powder or a salve, for the treatment of trachoma with pannus. **Parinaud's conjunctivitis** is well described ; for vernal conjunctivitis, Wicherkiewicz proposes the better term "periodic hyperplastic conjunctivitis." **Conjunctivitis nodosa,** caterpillar conjunctivitis, is tersely dealt with by a case of DE SCHW. and SHUMWAY, with a typical illustration of what is called **foreign body tubercle.**

The **cornea** receives 30 pages (DE SCHW.). MORAX endorses the statement of Fuchs, that ring abscess is mostly traumatic ; the cellular infiltration of the cornea is anaërobic. The infectious matter is transmitted through the wound into the globe, and attracts the leucocytes in the aqueous to adhere to the posterior side of the wound; purulent infiltration or sloughing is the consequence.

Infected Ulcers of the Cornea and its Varieties, usually called **Serpent Ulcer of the Cornea,** is considered by Dr. ZUR NEDDEN. (*a*) **Infected Marginal Ulcer:** superficial, narrow, gray infiltration clearing up. Cleanliness is all that is wanted. (*b*) **Corneal Ulcer from Bacillus Pyocyaneus.** Found by MCNAB in a case of hypopyon keratitis ; further, two cases have been described by Prof. SATTLER of Leipzig, and one by BIETTI; the germ is unusually virulent. Early incision (Saemisch's) best to prevent panophthalmitis. If not very extensive, galvanocautery points successively along the infiltrated margin stops the progress with more preservation of available cornea in the majority of cases. [H. K.] (*c*) DE BERARDINIS asserts from his investigations that streptothrix is the cause of many corneal ulcers which frequently are moderately severe. (*d*) DE BERARDINIS has

found the bacillus coli in severe corneal ulcerations. (*e*) Corneal ulcer is caused by the *diplobacillus* (Morax-Axenfeld) oftener than supposed. (*f*) Dr. KIPP describes corneal ulcers, central or paracentral, with infiltration lines radiating all around the edges of the ulcer, and in severe cases connected together by transverse lines. He speaks well of mild treatment, warm borated fomentations and atropine.

RÖMER'S pneumococcus-serum, acquired from Merck, has been used by several experienced oculists, with good results in the recent cases, whereas the advanced ones were not benefited, and had to be treated with galvano-cautery and Saemisch's incision. Yet they all say they would use it, and expect that the older, unfavorable cases now would be rarer, as they could be cured in the beginning. The other affections of the cornea are reviewed as to what is new in diagnosis and *nosology*, and treatment is properly considered. Darier described a new form of heredito-syphilitic keratitis. They have a dental deterioration differing from the Jonathan Hutchinson ones by affecting the four molars, which terminate in four tuberculous points. By an arrest of development they are insufficiently covered with enamel, and the yellow dentine is exposed, which proliferates into several more or less points. They shrink by exposure, are of great fragility, and disappear rapidly. Interstitial keratitis may be caused by injury. Stanculeano found in a case, which he had diagnosed as parenchymatous keratitis, an ulcus internum, Descemet's membrane defective, as well as the adjacent posterior layer of the cornea.

The **grill-like corneal opacity** which was first described by BIBER and HAAB, the grill-like keratitis, also called trellised opacity, or lattice-form opacity. It is hereditary. There is a neat, sharp picture in the text. Nodular or punctate keratitis, deep-seated keratitis, and different rarer forms of keratitis have been described. *Dionin* has become a popular remedy ; 5 %, rarely stronger, is frequently used now, owing to its analgesic action.

A number of remedies have been used and recommended, but with doubtful use. Conical cornea is to be benefited by glasses, and a number of operative procedures, complicated, more or less irrational ; the judicious galvano-cautery is still the best method. The recommendation of ANDERSON CRITCHETT to go on gradually, first a superficial cauterization, and then deeper, is superfluous in the experience of the reviewer. If you practise it alone, it has no effect, the epithelium regenerates itself even

without an opacity. The reviewer finds the cauterization with a small platinum disk the best. How deep we should burn, is a matter of experience. If the cornea is pierced, there will be no harm done, though it is not necessary. The after-treatment should be careful, so that there will be a clean scar, without suppuration. The eschar will leave a clean scar. The **pupil,** so important in diagnosis of nerve disease, is studied with great zeal, but clear results are still lacking on most of the important questions. The literature is extensive, and the experimentation delicate and very difficult; the report is adequate. **Uveal tract.** C. H. Williams (p. 106) treated a relapsing case for 5 months with 30 applications of bromide of radium 3 times a week, held just clear of the eyelashes with the eyelids open for about a minute. In a month's treatment the cornea showed clearing and V increased to 0.1, finally 0.5. Williams will not say that the improvement was due to the radium, but the case shows that pure radium can be used around the eye without danger.

Tuberculosis of the uveal tract has been described by several authors: v. Michel, De Schweinitz and Shumway, Pooley, Posey, Abadie, Heath, and v. Hippel. The diagnosis has often been confirmed by tuberculin injections T. R., as it is the main remedy. Enucleation is not imperative. The results are very good. v. KIPPEL records 14 cases. **Syphilis.** EWETZKY's monograph, Syphiloma of Ciliary Body, quoted. ALT and KIPP mentioned, the permanently successful cases of STIEREN and H. KNAPP omitted, *Journ. A. M. A.*, Convention of Atlantic City in 1903.

Diseases of the Retina, compiled by JACKSON. Rarer conditions are mentioned; transient blindness, unilateral, from disturbed circulation; man aged eighty-four; recurrence of blindness for five hours. Dr. JAMIESON saw with the ophthalmoscope the arteries getting smaller and smaller, so that they were invisible; opt. disk perfectly pale. Dr. Jamieson supposed that the difficulty was transient arterial spasm.

Retinal hemorrhage studied by Dr. COBURN. **Retinal hemorrhage,** following compression of the chest; in diabetes. Hemorrhagic retinitis, caused by renal thrombosis; from tapeworm. Anæmia, with hemorrhage; visually not impaired. MILLIKIN: Dilatation of the retinal vessels; a case of peripheral tortuosity of veins, "crinkled," in renal and diabetic disease

(black ophthalm. picture); arteritis and retinal ischæmia, by arteriosclerosis, of men of twenty-three and twenty-eight, and other vascular retinal anomalies; neuro-retinitis in chlorosis; eye-strain retinitis; retinal degeneration with idiocy; treatment of detachment of the retina.

Diseases of the Optic Nerve. Pseudo-retinitis is described by many authors. It can be expressed with the sentence that the aspect of the optic disk and retina has a large latitude, simulating neuro-retinitis. Particular attention to it should be given in the ophthalmoscopic and clinical courses; nevertheless, it is not superfluous to point them out in print: Optic neuritis; *optic atrophy*, arteriosclerosis as a cause, as dwelt on by C. S. BULL (*Ann. of Ophthal.*, Jan., 1904). Peripheric atrophy (FUCHS), septa running from the pial sheath and the lamina cribrosa into the nerve, about 15*mm* back. Kiribuchi (ARCH. OF OPHTH., Nov., 1904), from a careful study on the subject, finds that septa also exist in the nerve near the optic foramen. Hereditary optic atrophy, traced by Arnold Knapp through three generations; 8 cases, ARCH. OF OPHTH., July–Sept., 1904. Optic atrophy with tower (or steeple) skull (oxycephaly). Enslin reports 26 cases, adds 2 of his own (*Gräfe's Arch.*, lviii., 1, 151). Description with 2 illustrations, p. 135. Vessels of optic disk in lower animals. Nettleship, by an anatomical study, has supplemented the ophthalmoscopic work of Lindsay Johnson with regard to the distribution of the retinal vessels in the lower animals.

Cavernous Degeneration of the Optic Nerve. SCHNAUDIGEL, O. (*Graefe's Arch.*, lix., 2, 344). In an eye first seen in an attack of glaucoma, and which then presented a blood-red appearance of the optic disk, Schnaudigel found a cavity formation in the optic disk (Fig. 9, p. 136). He believes that this condition arose from an apoplexy of the nerve in which the hemorrhage was broken up. The subsequent changes in the cavity formation resembled those after cerebral hemorrhage, or in the spinal cord in traumatic syringomyelia

Hyaline Bodies (*Drusen*) of the Nerve Head. CIRINCIONE (*La Clinica Ocul.*, March, 1904), after microscopic examination of two eyes, does not think that they always follow an inflammation. He found no destruction of nerve fibres by them. He thinks they must develop slowly, so that the nerve fibres can adapt themselves to the displacement caused.

STREIFF (*Klin. Monatsbl. f. Augenheilk.*, Feb., 1904) has studied six cases in Haab's clinic. He likens them to the concretions found in the dura mater and the dural sheath of the optic nerve. Most of his cases showed marked choking of the disk, and all gave some evidence of preceding neuritis.

Cortical Visual Centre. A most important case which Beevor and Collier watched for two years, in which the sole manifestation of gross nervous disease was blindness of the left upper quadrant of both fields, the fixation point and the lower quadrant escaping. A careful autopsy showed occlusion of the right posterior calcarine artery, causing destruction of the cortex of the posterior rim of the fusiform lobe, the lingual lobe from the junction of the calcarine and parieto-occipital fissure backward, the whole cortex in the depth of the calcarine fissure, and most of the inferior part of the cuneal gyrus. The necrosis did not involve the optic radiations; the upper two-thirds of the cuneus and the anterior ventral portion of the fusiform lobe escaped (*Brain*, xxvii., 153–162).

HINSCHELWOOD (*Ophthalm.*, Oct., 1904) reports a case of right homonymous hemianopsia with word-blindness. Patient was under observation nine years. **Autopsy**: At the lower aspect of left occipital lobe a triangular area sunken by atrophy, filled by 3 drams of clear fluid, covered by pia mater. The portion of destroyed cortex was triangular, limited internally by calcarine fissure, externally by the third temporal gyrus and the point of the occipital lobe. Angular gyrus intact. The patient had been able to write, but altogether unable to read, supporting the view that the cortical visual centre was intact, but the subcortical fibres coming from it were affected.

Other cases of cortical lesion were reported by Gamble, Goldzieher, Wernicke, Lechner.

PICK (*Am. J. Med. Sc.*, January, 1904). A remarkable case to show that hemianopic hallucinations may be produced by localized focal or functional affections in the optic tracts.

HEINE (*Gräfe's Arch.*, lix., 1, 189). Recovery of **Amblyopia ex Anopsia.** Girl, fourteen years; convergent squint; lost fixing eye by injury. Glass correction brought deviating eye to $\frac{1}{3}$, and after a year's use to normal acuteness.

Toxic Amblyopias.

BULLER, F., and WOOD, C. A. **Poisoning by Wood Alcohol.** *Montreal Med. Journal*, 1904, Jan., 397, and *Journ. Am. Med. Assoc.*, 1904, 117, 972, 1058, 1213.

A thorough investigation authorizes the authors to 17 conclusions, of which we abstract what appears more important. Methyl, or wood alcohol, in any form is dangerous to life and sight; thus far 122 deaths, and 153 cases have been known from its use. It causes blindness by a destructive inflammation of the optic-nerve fibres and retinal elements, followed by atrophy. Symptoms: Derangement of stomach and bowels, accompanied by vomiting, dizziness, headache, blindness; if fatal, depression of heart's action, delirium, and coma. The blindness is bilateral; may occur a few hours after the imbibition or in a few days. Contraction of the visual field and absolute central scotoma are present. The diagnosis can hardly be mistaken: acute abdominal distress followed by blindness should always arouse suspicion of methyl-alcohol poisoning.

The prevention of poisoning by this insidious drug can only be brought about by prohibiting the sale of "deodorized" wood alcohol in all its forms. Methyl alcohol is one of those ingredients that are innocuous to some people, but in this case they are in the minority. Treatment: Chiefly to get rid of the poison from the stomach and intestines by the stomach-pump and rectal injections. The treatment of the ensuing blindness is unsatisfactory. Pilocarpine and K I, later strychnia.

Alcohol-Tobacco Amblyopia. Its pathology is still under controversy. SCHIEK, 1902: primarily an alteration of the blood-vessels within the optic nerves; as the centre of the nerve is more scantily supplied with blood, the central nerve fibres suffer first and most. UHTHOFF: continues to believe that alcohol produces an interstitial optic neuritis. Experiments with methyl-alcohol prove that the ganglion-cells in the retina undergo changes preceding the degeneration of the nerve fibres. There is an analogy between acute poisoning by methyl alcohol and the chronic poisoning of ethyl alcohol. Alcohol and nicotine produce not only central scotomas, but also, not quite rarely, paracentral and peripheric ones.

Crystalline Lens. Calhoun encountered in 10 months five cases of cataract in patients suffering from uncinariasis (book-

worm disease). These patients were greatly anæmic and had a very yellow skin, no malaria or albuminuria. Cataract manifested itself after other symptoms of the disease (which is not rare in the South) for 3-12 months. The cataracts were all cured, the younger by needling, the older by extraction. *Ophth. Rec.*, 1904, April No.

Sympathectomy has not increased its reputation as an efficient and permanently good treatment.

Lids. *Blastomycosis* of the lower eyelid, illustrated by a nice photo. Fishkin's lid (Wood). This skin disease (blastomycetic dermatitis, Gilchrist) on the lids produces an uneven nodular swelling, with a raised rim, and ulcerous central surface, implicating the eyelashes. The organism causing the disease is in miliary nodules filled with a viscid muco-purulent substance. A small portion of the secretion may be put on a slide and potassium hydrate, added to clear away other matters, leaves the organisms visible alone. The conjunctiva has not been seen involved in the process. Like epithelioma, it caused defects and eversion of the lid. Cauterization, rays, blepharoplasty; when superficial: unpedunculated skin-flaps; the remedies, according to the size and shape of the affection. Gilchrist described this disease as blastomycetic dermatitis. Cases on the lids thus far have been reported in America, the largest number from Chicago (Wood and Wilder).

Vitreous. CIRINCIONE, as most investigators have done, has given up the view of the ectodermic origin of the vitreous embryological researches, though the whole series of vertebrates have shown that its origin is mesodermic, from the lens and ciliary part of the retina. ADDARIO has found clefts in the vitreous, especially in its central part, which he terms a senile involution of the vitreous.

HIRSCHBERG calls attention to the remarkable decrease in the occurrence of intraocular cysticercus in Germany. Gräfe had 90 cases among 80,000 patients, Hirschberg 70 among 60,000 from 1869–1880; but from 1880–1894 among 78,000 patients he saw but 3, and from 1895 to 1902 none. In other eye clinics of northern Germany the same experience has been found. Hirschberg points out that meat inspection has been enforced since 1883. Beginning with one diseased hog in 150, since 1902 there have been only one in 3,000,—doubtless due to a general knowledge of the

cause of cysticercus, and the result should be ascribed to the precaution. In New York no cysticercus has been brought to the knowledge of the reviewer, and none from outside.

In the article **Glaucoma** the continuation of the discussion of the etiology of this disease shows that we are not yet at the solution of this great problem. Brown Pusey (ARCH. OF OPHTH., 1904, March) bases it on osmotic disturbances (probably a hypercondition within the eyeball). Uribe Troncoso found excess of albumin in the aqueous, produced by an increased permeability of the degenerated vessel-wall to albumin. The reviewer gets the impression that there has been too much theorizing and too little clinical observation—for instance, the post-operative glaucoma, as it occurs in the operations for secondary cataracts by discission, which offers a typical picture of traumatic, say experimental, acute glaucoma, and its permanent cure by iridectomy, should be carefully observed and considered; further the anatomical condition of the uveal tract and the aspect of the retinal vessels should always be examined ophthalmoscopically, particularly as to vascular sclerosis; also the general condition of the body should be noted—diabetes, kidney troubles, syphilis, the condition of the heart, digestive distress. Next to this we should direct our attention to the pathological condition of enucleated glaucomatous eyes, and if we get any clew to resort to experimentation for glaucoma is not a distinct disease, as the infective ones, but a symptom like strabismus, which is produced by a disproportion of two functions of the eye to produce one determined object: refraction and accommodation to see an object distinctly. An anomaly of refraction is the given faulty condition which requires an insufficient or exaggerated effort to produce clear and binocular vision. There is no organic disease in those eyes, nor is the muscular strength too great or too little, neither the ciliary muscle, nor the external muscles, especially the lateral, internal, and external recti. This is a functional trouble, congenital; the eyeballs and the muscles are perfect. The difficulty is congenital, owing to a disproportion of the length of the eyeball for clear seeing; this entails an inadequate contraction of the muscle of accommodation, which induces the lateral recti to exaggerated or insufficient contraction. Glaucoma is not a congenital disease, and it seems not to be an affection by the function of a faulty proportioned constitution of the eyeball;

it mostly develops in later years, and therefore I would not consider it the consequence of faulty development, but rather an inflammatory affection, which in all probability develops by a chronic acute organic disease, and here I think vascular sclerosis is the most likely, and if there are more causes than one, this one appears the most frequent. This agrees also with the pathological investigations. This disease does not forcibly produce glaucoma, but is a predisposing condition. The accidental causes are manifold, causes that are sufficient in themselves, under other conditions, to cause glaucoma—for instance, traumatism. This idea is not new. It was clearly expressed by Dr. Bailey at the London International Congress (1888 ?).

Sympathectomy has not gained ground as a treatment of glaucoma. Serious after-effects have not been reported. It was followed by an acute relapse, requiring iridectomy. WEEKS and WILDER prefer making an iridectomy, and if this did have no good effect, sympathectomy might be done. UHTHOFF stated these results from iridectomy in chronic glaucoma: Improvement, 5 %; remained stationary, 45 %; slowly worse, 40 %; grew much worse, fully 10 %. ABADIE thinks the operation does not do much good. Myotics indicated, chiefly pilocarpin. FRÖHLICH advises to replace enucleation by Hippel's trephines of the sclerotic back to the ciliary body; diameter 5 *mm.* GRANDCLEMENT is enthusiastic of adrenalin and eserin in *acute cases.* His formula is:

Adrenalin.....	3.00 grams
Eserin.....	.05 "
Water.....	10.00 "

to be instilled every half hour.

ROY (*Am. J. Med. Sc.*, January, 1904). Case of dislocation of the lachrymal gland. Has had another case before; could find no more than 12 others. If not troublesome, no treatment; otherwise, according to the condition.

MCGILLIVRAY had a patient with a **fistula of the lacr. gland.** A probe entered about *2cm.* There was stillicidium at times. He introduced an electrode of a galvano-cautery as far as it would go; then he turned the current on, and in an instant the whole fistula was cauterized and the cautery withdrawn. Recovery was complete, no tears passing any more, after having flowed several years (*Ophthalmoscope*, Feb., 1904).

BRONNER reports an **acute orbital abscess.** Pus was evacuated below on the seventh day; there was an **opening in the eyeball;** the latter was removed two days later for **panophthalmitis.**

E. C. ELLET (*Trans. Sect. Ophthal., Am. Acad. of Med.*) reports three cases of **acute septic thrombosis of the cavernous sinus.** All these cases proved fatal.

W. KRAUS (*Trans. Sect. Ophthal., Am. Med. Assoc.*, 1904); Intraocular disinfection by iodoform, *Z. f. Aug.*, xii., Sup. 97) collects and criticises the cases hitherto published, and reports 10 additional ones from the Marburg Clinic.

DE LAPERSONNE says **stovaine** (*Recueil d'Opht.*, May, 1904), a hydrochlorate of benzoic ether, is very soluble in water. A 4 % solution is as effective as cocaine; anæsthesia in 2-5 min., lasting 5-30 min. Injection, subcutaneous and subconjunctival, well borne and efficient.

MANOLESCU extracts cataract in the usual way, but replaces the iridectomy by an iritomy, making an incision with straight scissors perpendicularly to the circular fibres of the iris. It does not prevent prolapse. C. SCHWEIGGER did the same.

HÖDERATH performs **iridotomy in closed pupil, shallow anterior chamber, and aphakia** by introducing a long spatula through a small incision of the cornea, *2mm* from the limbus, as far as the opposite border of the chamber; then he passes a very small Gräfe knife, *1mm* broad, upon the spatula through the chamber; then he withdraws the spatula, and finally he turns the knife and cuts the iris with it.

GIFFORD made a large conjunctival flap in extraction of cataract, which was no better than a small conjunctival flap. Gifford considers the **danger of iris-prolapse too great** to recommend simple extraction at all. He prefers an iridectomy and above all, if possible, a preliminary one.

H. B. CHANDLER reports (ARCH. OF OPHTH., June, 1904) 312, extractions with the **button-hole (small incision of the iris)** of about 1-*2mm* long, near the periphery. In this series there were only four cases with iris prolapse, all due to direct injury. The reviewer (H. K.) saw the operations of Chandler in the excellent eye hospital in Boston three years ago, and last spring by three other surgeons (Cheney, Standish, and———) in Boston at the meetings of the Am. Ophthalm. Soc. The technique in all of them was perfect, and there was no accident. The little

incision did not complicate the operation essentially, and most always closes without scar.

R. SATTLER, Cincinnati, O. (*Trans. Am. Opth. Soc.*, vol. x., p. 342), reports the manner of ANGELUCCI, the **fixation by grasping the upper rectus with a fixation forceps,** and other simplifications in the operative technique. Such a tendency has often been described and tried with the recommendation of discarding assistants. They have never taken firm hold, as the ophthalmic hospitals are well supplied with assistants.

WICHERKIEWICZ reviews and recommends the principle of the **open treatment** after cataract extraction. He is not for total occlusion, but only so much as the secretions are not locked up. He had three infections in a series of 400 extractions.

F. DE LAPERSONNE and POULARD (*Trans. 10th Internat. Congress*, 1904) recommend early posterior discission after cataract extraction ; sickle-shaped knife ; opens about on the twelfth day. He introduces the instrument *2mm* behind the summit of the wound, pushes it toward the centre of the eye, turns the knife so that the capsule is cut from behind, producing a V-shaped opening. (De Lapersonne has given the posterior opening up.—H. K.)

Foreign bodies within the eyeball, and magnet operation, are reported by several authors.

HAAB still uses the giant magnet in all cases, and draws the foreign body through the pupil, even when there is a scleral wound. The splinter never c mes through the lens, but glides around the margin. In one case traumatic cataract was produced by scratching of the capsule.

SCHMIDT-RIMPLER prefers to draw the foreign body into the interior chamber behind the iris, then do an iridectomy, and finish the removal with a Hirschberg magnet. In these cases **he has seen total detachment of the iris.**

VON HIPPEL uses large and small magnets, according to the case. In 2 cases out of 57, a meridional incision was necessary. In one case the foreign body was drawn directly through the lens. (See Haab above.)

Professor MELLINGER, of Bâle, has devised a new magnet. The coil is wound at the peripheric part of a wheel ; the centre part is empty, and receives the head of the patient. The current passes through the coil, magnetizes both the foreign body in the

eye and the iron mass held in front of the eye to attract the foreign body. Mellinger calls this the "**Innenpol-Magnet.**"

"The ultimate results are about the same in all the papers. After successful extraction, about one-fourth of the cases required enucleation, one-fourth retained sightless eyes, and about one-half were left with useful vision ; a few with full vision."

SCHWEINITZ's results are : Eyes saved with good V = 38.4 %; eyes lost, 38.8 % ; eyes capable of being improved, 23 % ; phthisis bulbi, 7.7 %.

SACHS has constructed a lamp to illuminate the interior of the eye, according to the conduction of light along a conical glass rod, which is placed against the sclera and throws a strong beam of light into the eye, illuminating the pupil, so that the forceps need not be used in the dark.

Operations in the Orbit.

ENSLIN and KUWAHARA removed a panophthalmitic globe. The stump of nerve attached to the eye was free from inflammation. The eyeball was penetrated during the operation. The infection followed the path of the optic nerve to the optic canal, and was due to streptococci. The infection of the proximal end was caused by the contents of the eye during the operation.

J. WEEKS: Providing cul-de-sac for artificial eye (*Trans. 10th Internat. Ophth. Congress*, Lucerne, 1904). There is a good deal of instructive reading matter on the lachrymal apparatus, the diseases of the lids, on tumors; injuries, sympathethic disease, general ophthalmology, general operative measures, and a list of the publications during 1903 ; list of books, journal articles, index.

We can only say that this *Ophthalmic Year-Book for 1904* is a very valuable addition to the library of every American ophthalmologist, and, in other countries, to all that speak English. A good many inventions, clinical observations, and original modes of treatment may be found to their advantage.

X.—**Anleitung zur Augenuntersuchung bei Allgemeinerkrankung** (Introduction to Examination of the Eyes in General Diseases). By Dr. HEINE, Breslau. Pp. 142, small 8vo. Jena, Gustav Fischer, 1906.

The author in the preface states that he has endeavored to show how to examine a patient methodically in determining whether any ocular symptom is present of importance for general diagno-

sis. The methods of objective and subjective examinations are first described and include inspection, focal illumination, skiascopy, ophthalmoscopic examination, testing for site, field, and muscles. Under each of these headings the symptoms of the various general affections which produce ocular changes are enumerated. Dr. Heine, for many years first assistant of Prof. Uhthoff in the Breslau University Eye Clinic, is peculiarly well-fitted to write on this subject. The technical introduction to each method of examination is to our mind too brief for the beginner, though we agree with the author that technique can only be learned by practice, and for the experienced it is unnecessary. As for the clinical part, one is astounded at its exhaustiveness, and the number of facts given is almost bewildering.

The relation of general diseases and the eye has recently been brought to renewed attention by the new edition of Schmidt-Rimpler, and the second edition of Graefe-Saemisch, in which this subject is treated by Uhthoff and Groenouw. Both of these fundamental works are more for reference. Dr. Heine's little book serves well as a digest and fulfils admirably the many purposes which this class of book answers and will therefore better serve the educated ophthalmologist as a review than as an introduction for the beginner. The style is brief and to the point. We think that the book would gain by appealing to a larger circle of readers if it were not so condensed, though this brevity, so rare in text-books of the present day, can readily be corrected in subsequent editions. A. K.

XI.—**Précis de Therapeutique Oculaire** par Le Docteur SCRINI, Chef de Clinique Ophtalmologique de la Faculté de Paris à l'Hôtel Dieu. Préface du Professeur de Lapersonne. Paris, S. Stimheil, Publisher, 2 Rue Casimir-Delavigne, 1904. Price $1.

"A la mémoire de mon vénéré maître, Ph. Panas, Fondateur de la Clinique Ophtalmologique de l'Hôtel Dieu."

Professor De Lapersonne has designated M. Scrini to teach the essential principles of Ophthalmologic Therapeutics, both medical and surgical. It is well known what large part is due to him in the adoption of the oily collyria.

Chapter I. **Asepsis—Mechanical Means:** They may be defined as "the rules of cleanliness," being ever so strict they could never be excessive. Washing the hands thoroughly with soap long and energetically; as to the patient, the operative region must undergo a like toilet.

Physical: Means I. Dry heat, in a kettle where we can have a temperature above 160° Centigrade. Instruments and bandaging material can well be sterilized in such a metal pot.

Moist Heat, for cutting instruments. A kind of stove is the autoclave de Chamberland with boxes for bandaging material.

Chemical Substances, antiseptics. **Technic or application of antisepsis. Dishes, platters, flasks, goblets. Instruments, compresses, gauze, cotton, collyria, and salves.**

Precautions of the surgeon and his aides.

Preparation of the patient.

Chapter II.: **Anæsthetics.** The different anæsthetics as the general : ether, etc., and the local: cocaine, etc. They are well described with all necessary details.

Chapter III.: The principal medicaments for the affections of the external membranes : Collyria, salves, called also moist collyria.

Antiseptics—Mercurials : biniodide of hydr., bichloride of hy., or sublimate, oxycyanure de mercure, hermophenyl, ichthyol, 1.00, vaseline 20.00. Eyelids and trachomatous opacity of cornea : acid picric 1.00 or 0.03, aq. dest. 100 or 30.00, boric acid, iodoform, iodol, methylene-blue, permanganate of potash, resorcine, tincture of iodine, etc. Tinct. iodi recent. 5.00, potass. iodi 0.50, glycerin depurat. xx gtt., one daily.

Emollients. Astringents : sulphate of zinc, oxide of zinc, alum, subacetate of lead, tannin.

Caustics. Silver nitrate, protargol, proteid of silver ; sulphate of copper has been very popular. *Ne craignez pas le cuivre, le cuivre est l'ami de l'œil.*—Debrayne.

Cuprol, discovered by Schwickeroth. It is a combination of copper and nucleinic acid, nucleid of copper.

Substitutive Medication. Jequirity, jequiritol for old trachomas.

Mydriatics. Atropine, homatropine weaker, euphthalmine, scopolamine, ephedrine, hyoscyamine, hyoscine, mydrol-mydrine, and others. To dilate the pupil for ophthalmoscopic examination, homatropine 1 %, or euphthalmine 0.05 to 10.0.

Sulphate of Duboisine is slightly stronger than sulphate of atropine. Galezowski prescribes : Sulphate of duboisine 0.05., aquæ destillatæ, 10.00 (1:20). Homatropine 1 % or 2 % is much weaker, both as mydriatic and cycloplegic.

Euphthalmine is the weakest of all the mydriatics, and is, therefore, the most suitable for ophthalmoscopy. The author quotes Schultz as saying that euphthalmine had never been seen to raise the eyeball tension. This is unfortunately incorrect. Three or four years ago the reviewer had two or three cases which by instillations of 2 % euphthalmine, in his private consultation rooms, produced several genuine glaucomatous attacks which, with 1 % eserine, in two hours were cut short. At the same time, several American ophthalmologists reported the same experience. Nevertheless, euphthalmine, 1 % to 2 %, is the best mydriatic for ophthalmoscopic examinations. Euphthalmine is, however, almost equivalent for ophthalmoscopy and other purposes. It is somewhat weaker, more evanescent, and a weaker cycloplegic.

The **Myotics** are of more recent age; their origin does not date earlier than 1862. In 1853, Argyll Robertson discovered in West Africa the Calabar-Bean which possessed a myotic and cycloplegic action. Jobst and Hesse called the active principle **Physostigmine,** and Vee and Leven **Eserine**. Soon the identity of both was established.

The myotic action of eserine is attained in 25 to 40 minutes. The diameter of the pupil passes from its greatest diameter of *6mm* to 5, 4, 3, *2mm*, persists in this state, or becomes punctiform in certain subjects at the concentration of the solution. The author prescribed thus: Eserine pure, 0.10, sterilized olive oil, 10.0. Dissolve the eserine in ether, mix with oil, and heat on a water-bath of 45° Centigrade until the ether is evaporated. In New York the mixture is with oleum arachis (peanut oil) 1 %, which is very satisfactory. Laqueur of Strasbourg has taught us all the services we derive in glaucoma, acute, chronic, and secondary. They are recognized in other countries, and in ours it is used to prevent, arrest, and vanquish an attack of glaucoma, without the help from surgery. The remedy must be instilled, in 1 % solution, often at the beginning, then more rarely, in accordance with the progress of the recovery.

PANAS indorsed all that his assistant has written. He adds that eserine should be used when the operation becomes inevitable; the use of eserine is necessary before the operation, in order to prevent hemorrhage. After the operation, eserine is also indicated to prevent relapses.

Pilocarpine, weaker than eserine, in 2 % solution may be used in watery or oily solution. According to researches by physiologists, f. ex. Grünhagen, 1868, Adamück and many ophthalmologists: Coccius, Pflüger, Wharton Jones, Hasket Derby, Warlomont, Hirschberg, Laqueur, Wecker, Gayet, Weber, came to the conviction that the myotics acted by dilatation of the vessels of the eye, principally those of the iris and the ciliary body, and the mydriatics acted by contraction of these vessels. The mydriatics increased, and the myotics diminished—contracted—them. This antagonism is not so marked on the healthy eye as the pathological, more important in practice than in science.

Chapter V.: **Modifier of local circulations**, treats on the revulsives, derivatives, vaso-constrictors, and vaso-dilatators. The revulsives are almost all abandoned, though they were most popular among the physicians of all times, except the last four or five decades. The reviewer has seen such fossil contrivances. The elder Critchett (George) used to show scrofulous children in old Moorfields with setons behind their ears and said: "On this little string hangs all my reputation!" The reviewer saw it also here and there in the country, used by old physicians in Germany, but in all universities they were obsolete. Great was the reviewer's astonishment to see it so patronized by a first-class eye-surgeon in the largest ophthalmic hospital in the world.

The **subconjunctival injections** and those into the eyeball for detachment of the retina and almost every disease are still far from endorsed in all countries as a legitimate passport. Among the **derivatives,** the **leeches** continue to hold their honest reputation. They are rarer in general medicine than before, but in ophthalmology their excellent services can almost daily be verified: it is in acute, *i. e.*, the so-called rheumatic iritis; ever since Wm. MacKenzie, in Glasgow, published the remarkable observation how he treated an iritis-patient in bed, and instilled atropine into his inflamed eye, and later found his patient not at all improved, the pupil and the pain remained the same. Then he put to the temple 6 leeches, which he let suck until they fell off. When he then examined his patient again, he found the pain relieved, and the pupil enlarged, although there had no atropine been instilled. The reviewer has repeated MacKenzie's experiment with the same result, and he is convinced that the leeches put midway between ear and eye, as near together as possible, and letting them suck 2 hours, and when they fall off

early the bleeding may be maintained by absorbent dipped in hot water. Every thing, of course, must be scrupulously clean and aseptic. It is prudent to let the patient keep his bed next day, quiet and careful in his diet, minding the physiological fact that after abstraction of blood, the blood will flow to the part affected with greater force the next day.

Scarifications with a curved knife have some value in hyperæmic swollen conjunctivæ, especially at the retrotarsal folds, in different inflammations.

Vaso-constrictors and vaso-dilatators. This paragraph gives a very clear description of **Adrenaline** in all its useful services; and a sketch of **Dionine.** The latter is prescribed

℞ Pure dionine 0.50
Aq. dest. 10.00

Instil 2 drops into the lower conjunctival cul-de-sac, once daily. Apply afterwards an enveloped warm compress.

For iritis prescribe:

℞ Pure dionine 0.25
Atropin sulphate 0.05
Aq. destill. 10.00

Chapter VI.: **Physical Agencies.** § 1. **Heat.** It is used moist or dry. (1) *Moist heat.* It has been used at all times to relieve pain and to absorb pus. The moist applications act chiefly on the anterior parts of the globe, particularly in keratitis with hypopyon.

Cold is applied in pledgets of gauze or absorbent cotton, cooled on a block of ice or immersed in cold water, placed on the closed eyelids, after they had been wrung so that they are moist but not dropping. They are changed when they get warm. Ice-bags, containing small pieces of ice, put on the swollen and hot lid. Another mode of refrigeration is the so-called Leiter's coil—a small packet of lead-tubes, large enough to cover the inflamed part; the cooling is produced by cold water flowing from a bucket, elevated several feet, and is received in another bucket on the floor. This mode has been fairly popular, also for other parts of the body, for instance in the initial stage of tympano-mastoiditis.

Cold is indicated chiefly in acute catarrhal or purulent conjunctivitides, those of infants and adults, the epidemic Egyptian ophthalmitis, also in burns, traumatisms of the lids and the globe.

GOLDZIEHER recommends it in internal hemorrhages. It is evident that cold is contra-indicated by feeble and anæmic persons.

Electricity. Static electricity has only a limited employment in ophthalmic therapeutics, but the dynamic electricity batteries, engendered by chemical reactions, are popular.

Electrolysis is used for contraction of the lachrymal duct. Abadie, Terson, and Dor have used electricity,—very feeble currents, and the electrodes not farther than 2–3*mm.* Brocq, Chisolm, Pansier, and others have tried to destroy the roots of crooked eyelashes. All these three indications have not been satisfactory.

Electric light is frequently used and with good result. In order to have correct light, *i. e.*, that which reflects the background in the normal color, which is red-yellow, we have to put a thin glass plate, tinted faintly yellow-orange. The electric light is of great service in nuclear and above all in secondary cataract. Farther on is electric light of the apparatus by Rochon–Duvigneaud: the diagnosis of an intraocular neoplasm is easily established.

To determine the presence and the place of a foreign body can be well made out by the magnetometer of Gérard and by the sideroscopes of Asmus and Hirschberg. These two apparatus repose upon the same principle, which Dr. POOLEY, of New York, first made known, viz.: the deviation of the magnetic needle.

The **large magnet,** or **giant magnet,** introduced by Dr. O. HAAB, prof. Univ. of Zürich, which is more expedient and more useful than the small magnets. It has the advantage that in most cases the giant magnet draws the particle of iron into the posterior recess of the aqueous chamber, without the surgeon knowing where the iron splinter is located. The electrode, held the fragment a little above the centre of the posterior surface of the lens, draws the particle around the equator of the lens into the posterior recess where it shows its presence by a slight bulge. From there we try then to draw it through the pupil into the anterior chamber, into which a small perforation is made with the keratome. The electrode is then put to the little opening, and the spicule jumps to the electrode, where it is held as long as the current is kept up. In many cases it will remain in the posterior chamber, wherever you hold the magnet. This is rather better than the passage between the anterior lens-capsule and the iris, whereby rupture of the iris or the lens capsule may occur. Under local anæsthesia an incision with a keratome is made, right before

the bulge in the iris, parallel to the border of the cornea, through which a diminutive piece of iris is drawn out, and nipped with an iridectomy scissors. The chip will then fly to the electrode. It is a sight inferior only to a cataract operation on an old man, who, in five minutes has his sight restored, and without pain. There is a good deal of detail which we have to mind, for instance: if the incision runs obliquely from below upward, the electrode must be in the upper part, if at the lower part the foreign body cannot slip out. It is most important that the chip is not drawn into the ciliary body.

The determination of the location by the X-rays has now been advanced—by Sweet in Philadelphia, and Dixon in New York, and others abroad. When the location has been determined without an error, the small magnet has the ascendency. A small incision is made into the albuginea next to the foreign body. Then a long or short electrode is introduced, the current is turned on, and in the successful cases the splinter is brought out sticking on the end of the electrode.

Protection of the eye from light. Scrini says: "For my part I have never seen a patient that felt not really relieved by smoked glasses." Every oculist will indorse this. Some patients prefer yellow, or rather yellow-smoked glasses (Fieuzal). This would explain itself by the fact that the yellow glass attenuates not only the luminous but also the thermic and chemical radiations.

He cites a case of a student whom he had treated with Panas. The student had, in consequence of overstraining his force, felt a rapid diminution of sight, almost to total blindness. Under treatment his sight improved progressively, but the optic disks remained discolored. Complaining of photophobia, Panas advised him to wear smoked spectacles, which he replaced soon by pure yellow glasses. "Grand was the relief and, in that way, the patient could terminate his studies."

In Chapter VIII. we obtain some of the history of the **Ocular Prothesis**. We know the merits of their first makers, Boissonneau and his sons. This was about 50 years ago. That family almost monopolized this small but lucrative craft. Their motto was: "Nous écorchons les riches, mais nous epargnons les pauvres." (We fleece the rich, but we spare the poor.) After them there have been better artificial eyes—for instance, by Müller Bros., at Wiesbaden, with help from Snellen and Pagenstecher.

It is important that the artificial eye fits well on the stump and the orbit. It should be removed in the evening and carefully cleansed. The conjunctiva should be kept healthy, cleansing it with a lotion of boric acid and with a mild astringent if inflamed. The eyelashes and the edges of the lids should be scrupulously cleaned to avoid adenoblepharitis and its consequences. The artificial eye should be laid in a lotion of boric acid, washed with absorbent cotton every evening, and kept free from dust. The artificial eye will be corroded more and more with its use. If it has been worn 15 hours a day, it can scarcely be continued longer than a year. "This is the extreme limit."

In Chapter IX. the **Mechanic Agents** are described. First the **Occlusive Bandages**: **Metallic protective apparatus.**—Stephensen, Andrews, Meloy, Ring, Fuchs (with illustration), and Pagenstecher. Fuchs uses them over the bandage of his cataract patients. It consists of a wire-lattice surrounded by an upholstered ring, and is fastened by a bandage. Then he describes in detail the compressive and immobilizing bandage of DE GRAEFE and that of PANAS in the Hôtel Dieu. Both consist in careful padding out the depressions surrounding the eye, after cataract extraction, with absorbent cotton. PANAS began these bandages with a small bullet of sterilized cotton, which he put into the nasal depression, and laid small cotton compresses in the depression between the margin of the orbit and the elevation produced by the eyeball. This is held by flannel or cotton bands.

Tarsorrhaphy is another help to prevent the expulsion of the globe, chiefly in Basedow's protrusion, also protrusion by traumatism. The operation is simple: at the temporal corner of the palpebral fissure the lids are shortened 2 to 5*mm* by cutting off the skin of the free border at the upper and under lids, whereupon the denuded parts of the lids are stitched together (Tarsorrhaphy).

Massage has been practised by the African sorcerers, by the Chinese, the Indians, the Greeks, and the Romans. Hippocrates' teachings of it have been collected by Asclepiades, among others. Really the massotherapy of the eye has entered into the scientific road only the last few years. The simple massage gives good results on the subconjunctival and palpebral ecchymoses. The rapid resorption of exudations, under the influence of massage, explains its application in iritis. It is recommended by Mules, Domec, etc., for blocking of the central artery of the retina, as

the accelerations of the circulation might favor the displacement of the embolus. The author describes the **varieties of massage,** the **medicamentous,** the **traumatic,** the **instrumental** in trachoma.

Sutures are of great value in eye-surgery. They require to be handled with great care, especially in perforation of the sclerotic and lids. In laceration of the eyelids the traction of the muscles must be considered ; they tend to enlarge the opening, as the two divided parts draw now the gap asunder. It requires a suture that unites surely ; if the tarsus is lacerated with the skin and the orbicular muscle, the adaptation must be correct and firm, and there should be no gap at the free border which may cause laceration. The patient should be in bed and keep as quiet as a cataract patient.

The last paragraph deals, on two pages, on some **mechanical modes of treating trachoma,** the disease of which DE GRAEFE said that it was the second question in ophthalmology,—cataract being the first, in importance. The mechanical treatments are : As in inveterate cases of trachoma the topical remedies were found insufficient,—one turned to scarifications, to *brossage*, *râclage,* and *expression.*

Brossage and **râclage**. The patient has to be under general anæsthesia. The hard granules in the cicatricial tissue have to be removed by a curette. The same has been done for a long time at the St. Petersburg Ophthalmic Hospital, where it was introduced by the late Dr. SCHROEDER. The reviewer has seen the brossage in New York, where Dr. MARPLE, who had seen it in Paris, introduced it. The patient, under ether, had his inverted lids scarified in parallel lines, after that a metal brush passed more or less deep over the conjunctival surface, where the hard granules came out. A similar treatment, Dr. GEO. LINDSAY JOHNSON, of London, showed me, at least fifteen years ago. The results were good.

The **roller forceps** is not particularly for the treatment of the old hard, cicatricial cases, but for recent cases where there are any number of well developed, round granules. Its **principle is to remove the granules with preservation of the mucous membrane, i. e., the conjunctiva.** The reviewer, before he designed the roller, saw a pair of pincers, by Dr. Hy. D. Noyes, at the New York Eye and Ear Infirmary, a forceps

with two branches, with smooth and concave cross-pieces at the free ends of the branches. With this he squeezed the granules out. Several of these forceps with cross-pieces at the end have been made since, which pressed out the granules more or less. The reviewer, at once, made the cross-pieces cylindric and fluted. In order to spare the integrity of the conjunctiva, the cylinder was made fluted, so that during the rolling the prominent part of the membrane of the granule should burst and the contents be pressed out. This instrument is used almost every day, with undiminished satisfaction, but the number of children with acute trachoma is much less than several years ago, but to make amends, the chronic trachoma of the Orientals has greatly increased.

There are in Chapter X. Some General Treatments: The chief remedies for pathologic constitutions or acquired general diseases. Then a chapter on: Consultations on Some Frequent Eye Diseases. This gives the discussion to lead to the diagnosis and the treatment; the remedies are not only given the name of the chief drug, but the full formula, how to write it down, and how to give the direction to the nurse or the patient. This review, which the undersigned has read mostly with great care, will convince the reader that it is an excellent school-book, and different from most others of which one is copied from the other. The reviewer made the acquaintance of the author; he gives also courses in refraction, and all that ophthalmology contains.

Scrini's book describes so carefully the **modern remedies** not only short, but in extenso, the pharmacology and particularly the new features they have; the treatment in formulas, which the reader can try at once, also the use and effect on the patient are clearly and fully described. There should be soon a second edition, and this is worthy of being translated, because no book deals so extensively and clearly with the modern therapeutique.

H. KNAPP.

XII.—**Einfuhrung in die Medicinische Optik** (Introduction into Medical Optics). Von Dr. A. GLEICHEN, Privatdocenten an der Berlinischen Technischen Hochschule, etc., in Berlin. Wilhelm Engelmann, Leipzig, 1904.

This book gives a thorough presentation of all that is necessary to understand and handle the higher chapters of physiological optics. Trigonometry and algebra are mostly used, so that a scholar who has gone through the mathematics taught in a good

German Gymnasium or an equivalent—a polytechnical school in any civilized country—will understand the book, and obtain sufficient knowledge to understand and teach refraction in all intricacies and combinations ; from the combined system of the normal eye, with its asymmetry (astigmation) and its correction with cylindrical glasses, and further a variety of contrivances, instruments, and apparatus from the simple spectacle-glass to the complicated microscopical and astronomical instruments. A similar preparatory book is that of A. S. Percival[1]—although it does not go so high. A friend of mine told me that there was no mathematical book to do justice to scientific ophthalmology of the present day. The book of Gleichen was up to the time, and he intends to translate it. He is a quick worker, and a scientifically educated man, but I do not know whether he is doing it.

H. K.

[1] *Optics, a Manual for Students*, 1899. Macmillan & Co., 10*s*. net.